JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

THIRD SERIES

VOL. 45. No. 3 — 6 DECEMBER 1937

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A sketch, probably by G. S. Repton, of The Dairy at Blaize, Bristol, by John Nash

JOURNAL OF THE
ROYAL INSTITUTE *of* BRITISH ARCHITECTS

VOL. 45. 3RD SERIES 6 DECEMBER 1937 No. 3

Journal

The Architects Registration Bill

Mr. Lovat-Fraser, Member of Parliament for Lichfield, won a place in the ballot in the House of Commons for the time allocated to private members' Bills, and has decided to father the Architects Registration Bill. The debate on the second reading will take place at 11 a.m. on Friday, 17 December, having first place among the Bills down for that day. The Bill is substantially the same as that introduced in Parliament last Session, the only alteration other than technical drafting alterations being the addition of a proviso to clause 2 giving to any person refused admission to the register by the Council a right of appeal to a tribunal consisting of three persons appointed by the Lord Chancellor, the Minister of Health and the President of the Law Society respectively. In order to ensure the complete impartiality of the tribunal it is also provided that no member of the Architects' Registration Council may be a member of the tribunal.

The supporters of the Bill as given on the paper are Mr. Bossom [*F.*], Mr. Acland, Mr. Ammon, Mr. Grenfell, Mr. Hicks, Sir Thomas Moore, Mr. Noel Baker, Mr. Godfrey Nicholson, Mr. Roland Robinson, Mr. Henry Strauss and Sir John Withers.

The Catalogue : Another Gift By Sir Banister Fletcher

The Catalogue is out at last, and by now will be in the hands of most subscribers. Its birthday was celebrated by the presentation of a specially bound copy to the Catalogue's "onlie begetter," Sir Banister Fletcher. Mr. Darcy Braddell, who was deputising for the President as chairman of the Council Dinner Club, made a short speech full of graceful and appropriate tributes to Sir Banister, whose generosity to the Institute, he said, had already been shown by his foundation of the Banister Fletcher Essay prize, and who now by his gift to the catalogue had become one of a distinguished list of benefactors of the library. Mr. Braddell was able to end his remarks by announcing that Sir Banister had written to the secretary a day or two previously to say that he wished to contribute £200 more to enable the second volume to be published at once.

Sir Banister, in his reply to Mr. Braddell's speech, said what a pleasure it was to him to be able to help forward a work which he knew to be useful. An architect, he said, was well accustomed to having to deal with extras and omissions, and it had not surprised him when he heard that some more money was required to see the job through than he had originally given. He was proud to regard himself as "the client" in this case, and to meet the extra cost of the second volume.

The demand for the catalogue during these first weeks has been most encouraging. It is never easy to persuade people that they need something without which they have done quite well for many years; but we should like to think that this catalogue will soon prove to everyone who has it as indispensable as any other item of his office equipment. This very honest functional reason is the reason why the catalogue was published; there are, however, other reasons why it should be bought, the most obvious of them being that so notable a venture as this deserves widespread support from the members of the Institute. Its presence among other great special bibliographies in public libraries will add to the prestige of the library in a much more certain way than our self-confident talk about it has done in the past. The second volume is almost all ready for the press, and will, we hope, be published early in 1938. This second volume will contain what in some people's estimation is the most useful part of the catalogue, a classified index to the whole collection, so that anyone who wants to know just what we have on this or that subject has only to look it up to find references to every book on the subject and cross references to related subjects.

General Meeting Discussions and the Distribution of Advance Proofs

A suggestion was made recently in an *Architects' Journal* leading article that the discussions after R.I.B.A. sessional papers would be much improved if the text of the paper could be circulated or printed in the JOURNAL before the date of meeting to give the audience a chance of considering it carefully enough to prepare contributions to the discussion. We all know how often after the very best and most provocative papers almost no real contributions are made by speakers from the floor of the hall, those who are called on by a despairing chairman, who sees the meeting petering out almost before it has begun, generally open their few remarks, which they acknowledge to be inadequate, by saying: "After a paper such as this, so scholarly, so thoughtful, so pregnant with a lifetime of experience, who am I to venture on extempore comment? We will all, I

know, read it when it comes out in the JOURNAL and then may be competent to make some intelligent comments . . . ."

Of course, when it does come out in the JOURNAL the first excitement that might have prompted discussion has passed.

Two ways of getting over this have been considered frequently in the past, but neither are really practicable. The first is to *publish* the paper in the JOURNAL in advance and to print the discussion, detached from the paper, in a subsequent JOURNAL. The other is to circulate " galley pulls " of the paper to all members in advance, the JOURNAL publication being deferred until after the meeting as at present. The objections to these are that the first method divides the paper from the discussion ; this might not matter much now, when discussions are sometimes irrelevant anyhow, but it would be a serious disability when the discussions are relevant and good, as this advance publication would doubtless make them. Also, both this method and the circulation of " galley pulls " might result in people staying away from the meetings, though this reason against advance publication is not very convincing. The circulation of galley pulls, even if it was only to London and Home Counties members, would be expensive and not justifiable on that account alone, since most certainly almost all the galleys would be destroyed unread.

The only alternative which is possible is to send advance proofs to anyone who thinks he may want to join in the discussion. To a certain extent this is done, as the vote of thanks speakers and any others whom the paper reader thinks should have them receive advance proofs at present, but *in future there will be advance proofs available for all members who apply to the* JOURNAL *editor* not later than the Wednesday preceding the date of the meeting.

A NATIONAL REGISTER OF INDUSTRIAL ART DESIGNERS

Some time ago the Council for Art and Industry recommended that a Register of Industrial Art Designers should be formed so that industrialists and others who have reason to require the services of artists should have a central source of information to which they can refer with reasonable assurance that they will be able to get in touch with reliable and experienced men and women best suited for their particular purpose. This national register has now been formed by the Board of Trade. It is administered by a governing body consisting of five representatives each from the Council for Art and Industry and the Federation of British Industries ; two from the Association of British Chambers of Commerce, and one each from the Royal Academy, the Royal Society of Arts, the Design and Industries Association, the National Society of Art Masters, and the Conference of Central Art Institutes of Scotland.

Any qualified designer can apply for registration and if accepted is registered on payment of a fee of £1 1s., which is renewable every three years. Applicants for entry to the register will have to submit examples of their work to a Standing Committee consisting of three members of the Governing Body and two members co-opted from the register's Board of Honorary Advisers, the names of whom have not yet been announced.

The chairman of the register is Mr. Charles Tennyson, C.M.G., the registrar is Mr. T. A. Fennemore, F.R.S.A., and the secretary Miss M. E. Pheysey. The address of the register office will be 32 St. James' Street, S.W.1.

Sir Banister Fletcher receiving the R.I.B.A. Catalogue from Mr. Darcy Braddell

THE PREVENTION OF NOISE IN BUILDINGS

By C. J. MORREAU, M.A.(Cantab.) [A.]

A Paper read before the Royal Institute of British Architects on Monday, 22 November 1937
Mr. T. A. Darcy Braddell (Vice-President) in the Chair

I must confess to a peculiar embarrassment this evening due to peculiar circumstances. The suggestion that I should read a paper to the R.I.B.A. on the Prevention of Noise in Buildings was originally made at a time when I was on the staff of the Building Research Station and was closely associated with the research work on problems of sound transmission in progress both there and at the National Physical Laboratory. Since the proposal I have ceased to be employed at the Building Research Station, but I am pleased to say that the director has allowed me to refer to-night to the work with which I was associated. I should like to say how very grateful I am to Dr. Stradling for this permission. At the same time it must be made quite clear that every opinion expressed to-night is not necessarily held officially by the Department of Scientific and Industrial Research.

It is my object in this paper to review all methods by which the architect may prevent noise from being a nuisance in the buildings which he erects. One of these methods is to construct the building in such a way that as little sound as possible is transmitted from one part to another. This is the problem on which research workers are engaged and forms the subject of the major part of this paper. I should like to make it clear at the outset, however, that I am in no position to describe to you any completely "sound proof" method of construction; nor to reveal the secret of that much sought after material whose application in half-inch thicknesses overcomes all the problems of sound transmission. Scientists will be the first to admit that there is still scope for a great deal of research and all I can do is to outline the present state of knowledge of this subject and to describe some constructional principles which make for effective insulation, as well as some which do not.

The problem of transmission of sound is a highly complex one, for there are many kinds of sound and many alternative paths by which they may travel, all of which are interrelated. In order to simplify discussion I propose, for the purpose of this paper, to divide sounds into three classes:—Air-borne sounds, which originate as sound waves in air, e.g., speech, violin music, wireless; impact or contact sounds, which originate as the result either of a blow on some part of the structure, e.g., footsteps, or by some other contact between an object and the structure, e.g., scraping of chairs; and equipment sounds, which, obviously, originate from one of the many forms of noise-producing equipment which are included in the modern building. This division refers only to the origin of the sound, for, no matter what its origin, sound nearly always reaches the ear by air.

Air-Borne Sounds

Air-borne sound will continue to travel without great diminution in intensity so long as it has a continuous air path to follow. Open windows, cracks between floor boards, cracks round ill-fitting doors are all paths which sound follows readily, so that the first necessity in preventing transmission must be to seal all air paths.

Of the problems relating to air-borne sound, the most common is how to prevent speech and music from being audible in a neighbouring room. Assuming that there is no free air link between the rooms the readiest path for the sound is by way of the dividing wall or floor, and the capacity of a wall or floor to resist air-borne sound is one of its important properties. Single walls insulate by virtue of their weight and of their weight alone, the heavier the wall the better being the insulation provided. This is now a familiar fact, but it is worth while examining a little more closely the actual relationship between weight and insulation. This is shown in fig. 1, in which the insulation afforded by single walls of all kinds of materials (the insulation is measured in "decibels") is plotted against the logarithm of the weight per square foot of the wall; all the points lying very close to a curve which is approximately a straight line. From this we see that no property of the material of which a single wall is constructed is of significance except its weight, and this applies not only to solid walls but also to walls built of hollow blocks. The relationship suggests that you should regard with caution those advertisements which claim that a material is "heat and sound insulating." Heat insulating materials are usually porous and light in weight, whereas for sound insulation we see that

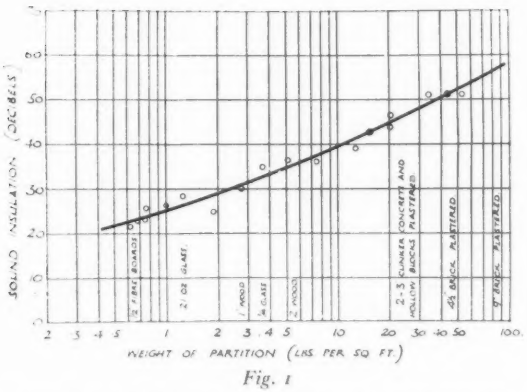


Fig. 1

lightness is a disadvantage, so that the two properties are seldom compatible.

Now although fig. 1 shows clearly that increased insulation against the direct transmission of air-borne sound is obtained by increased weight, there are two points which need to be emphasised. Firstly, differences of less than about 5 decibels are of little importance in practice, and secondly uniform increase in insulation results with uniform increases in the *logarithm* of the weight and not in the actual weight, i.e., it is necessary to double the weight each time to get a corresponding increase. Thus if you are doubtful under a particular set of conditions of the efficacy of a wall giving a reduction of 45 db. it is of no use substituting one giving 47 db.; the next best wall in practice is one that gives 50 db. It will be seen that this useful 5 db. difference is obtainable without undue increase in total weight in the case of light partitions (e.g., glazed or wood-panelled partitions), but that in the case of the heavier solid walls it is very difficult to obtain except by very large increases in weight. You are familiar with the incapacity of the ordinary 9-in. party wall to exclude the noise of a loud wireless set from the neighbouring house or flat, but since the next best solid wall is an 18-in. wall it is evident that as long as we have loud wireless sets to deal with it is going to be extremely difficult to insulate their noise completely by means of solid walls.

Where economy of weight is important, as it nearly always is, recourse must be made to double or complex construction. Were it possible to construct a double wall in which there were no connection at all between the two leaves then that wall would give insulation equivalent to the sum of the insulation given by each leaf separately—that is to say, two 2-in. clinker concrete leaves would give twice 43 db. = 86 db.; but in practice they do not by any means have this effect, for even if the intervening cavity is kept quite clear the solid contact with the surrounding structure at the edges provides a ready path for sound to pass from one leaf to the other. A double partition as ordinarily built is better than a single partition of the same total weight, but it is not very much better. Since the edge link is the weakness, it is to be expected, and it has been shown, that the sound insulation afforded by a double wall can be increased by isolating the edges of each leaf from the surrounding structure, and indeed full benefit from double construction is only derived if this is provided (see fig. 2). Quite effective results have been obtained by the use of ½-in. cork board as isolation. Admittedly the introduction of isolating strips presents practical difficulties, more especially as they must be unbridged even by plaster to be effective, but the principle of providing discontinuity between the leaves of a double partition is an important one which has been successfully used in practice and which is likely to grow in importance as we learn more about it.

The importance of transmission by way of the edges of double partitions appears to be greater in the case of masonry partitions than in the case of certain thin sheet materials such as glass or metal. With double windows the edge coupling is found to be of little significance compared with the coupling across the air space, and it is the width of the air space more than any other factor which determines the insulation provided by double glazing. With a wide air space a double window approximates closely to the ideal type of double partition referred to in fig. 2, as is indicated by the fact that two sheets of 21-oz. glass 9 ins. apart afford insulation very nearly equal to that of 9-in. brickwork. This is a rather surprising result and suggests that there

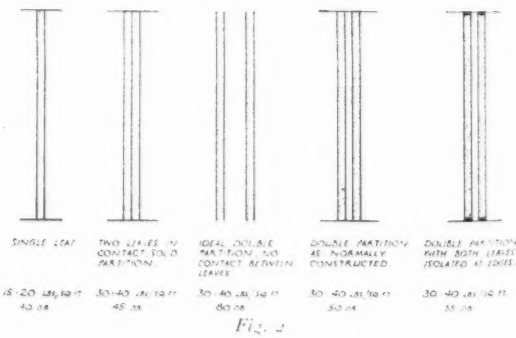

SINGLE LEAF
TWO LEAVES IN CONTACT, SOLID PARTITION.
IDEAL DOUBLE PARTITION, NO CONTACT BETWEEN LEAVES.
DOUBLE PARTITION AS NORMALLY CONSTRUCTED.
DOUBLE PARTITION WITH BOTH LEAVES ISOLATED AT EDGES.

Fig. 2

may be a field for the use of thin sheet materials which deserves fuller exploration.

A class of partition which is neither single nor double is the traditional wood framed or stud partition. This type of construction appears to behave partly as a single wall by virtue of the studs which connect the two faces, but largely as a series of small double walls, and stud partitions may give very useful results. For instance, insulation approximately equal to that given by 4½-in. brickwork can be obtained by a stud partition faced both sides with lath and plaster.

Unfortunately it is impossible in a paper of this description to present exhaustive data of the relative efficiency of different constructions, but an attempt has been made to group different forms into a rough order of merit in Table 1. Those of you who are interested will find much more exhaustive data in a Building Research Bulletin on this subject which is in course of preparation.

TABLE 1.

SOUND INSULATION AFFORDED BY WALLS WHERE THERE IS NO TRANSMISSION EXCEPT THROUGH THE WALLS.

Approx. Insulation db.	*Construction.*	*Approx. Weight lb./s. f.*	*Condition in Fairly Quiet Room Behind Wall.*
55	9 in. brickwork plastered ..	85	Ordinary conversation inaudible.
	Double 2 in. clinker concrete, edges of both leaves isolated by ½-in. cork board, plastered	33	Loud radio music and speech clearly audible.
	Plastered wallboard of wood shavings bound with cement on wood or concrete studs ..	20, 30	
	Double 21 oz. glass c. 9 in. apart	2.5	
50	4½ in. brickwork plastered ..		Loud conversation audible.
	3 in. reinforced concrete ..	45	
	Double 2 in. clinker, no edge isolation	33	Radio music clearly audible.
	Lath and 3-coat plaster on wood studs	17	
	Double 21 oz. glass c. 4 in. apart	2.5	
45	2 in.-3 in. clinker concrete, plastered	20-30	Ordinary conversation audible.
	Hollow blocks, plastered ..	20-30	
	Double 21 oz. glass c. 2 in. apart	2.5	Loud radio speech intelligible.
40	Slabs of wood shavings bound with cement, plastered ..	15	Loud conversation intelligible.
	Unplastered fibre board on studs	5	
35	2 in. hardwood	5	Ordinary conversation intelligible
30	1 in. hardwood	2.5	
	¼ in. glass	3.5	
20-25	½ in. fibre board	0.7	
	21 oz. glass	1.3	

The considerations of weight affecting the insulation of walls apply equally to the insulation against air-borne sound provided by floors. Thus the lighter, hollow types of reinforced concrete floors are actually rather less effective from our present point of view than the heavier, solid types. However, although the differences in weight of different types of floors covering different spans are of the greatest importance to the structural engineer they are not of great acoustical importance, coming as they do on the upper part of the curve of fig. 1. In fact you will seldom be very far out if you assume reinforced concrete floors in general to afford insulation to air-borne sounds roughly equivalent to that afforded by 4½-in. brickwork, and it is not usually necessary to take sound insulating properties into account when selecting a type of structural concrete floor. Timber floors are usually much lighter, and a good deal less effective than concrete floors, but as they fall nearer the lower part of the curve of fig. 1 useful improvement can be obtained by reasonable increases in weight. There is no doubt that the old practice of pugging with lime or clinker concrete was worth while from an acoustical point of view, but there is grave doubt whether any useful purpose is served by the modern counterpart of using light fillings such as slag wool, or by the frequently advocated provision of a layer of fibre board or quilt, the boards and ceilings remaining rigidly fixed to the joists.

As in the case of walls the direct transmission of air-borne sound through floors can be reduced by introducing discontinuities in the construction, but as these steps are similar to those which must be taken to reduce the transmission of impact sounds it will be better to leave their consideration until later.

Before closing our discussion of transmission of sound which is originally air-borne there is one consideration of great importance which must not be overlooked, though unfortunately little is yet known about it. We have been talking about the transmission of sound directly "through" a wall, and by this we actually mean that the air waves on one side which are our original sound set the whole wall into vibration, these vibrations setting up fresh air waves on the other side which constitute the transmitted sound. If we consider an arrangement of 4 rooms as in fig. 3, with a sound source in room 1, then sound is transmitted to room 2 by the vibrations in the wall AO and to room 4 by vibrations in the wall DO. But the vibrations in

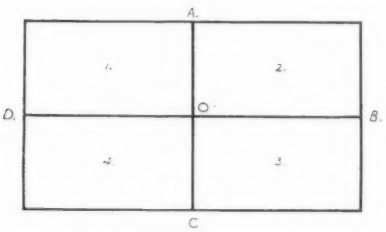


Fig. 3

the wall DO are not confined to the length DO ; they continue along OB, the vibrations in the section OB setting up sound waves in rooms 2 and 3. Thus transmission " through " AO is not the only way in which sound passes from room 1 to room 2, transmission along DB and all other common walls and floors also playing a part. Unfortunately no definite information is yet available as to the comparative " amounts " of sound which travel across and along two similarly constructed walls, and although it is likely that the transverse path is usually the more important, the longitudinal path can certainly not be neglected, so that it is useless to provide a highly insulating dividing wall between two rooms unless the common longitudinal walls are of comparable construction, or unless appropriate insulation or discontinuity is provided in the longitudinal path.

In this connection it should be explained that there is hardly ever any question of adding together the sounds which reach a room by different paths in order to assess the total sound transmitted. In practice it is nearly always the loudest sound only which matters and no benefit is derived from eradicating a minor noise unless the major noise is first suppressed.

Impact Sound

The impact sound with which we are primarily concerned is the noise of footsteps. This varies tremendously according to the way in which a particular person walks and the kind of shoe which he wears, but we can only conveniently compare different forms of construction under similar impacts and the comparisons which will be given refer to the impact of an " average " man's footsteps. The noise of footsteps varies also according to the nature of the floor surface trodden on ; this is particularly the case as far as concerns the sound heard by the walker or other occupants of the same room. It is often desirable to suppress the noise made in the room itself, and this can usually be achieved by laying a fairly thick resilient floor covering such as carpet or soft rubber sheeting, but the reduction of the noise above is by no means always accompanied by a corresponding reduction of noise in the room below, or in other parts of the building. The more important problem with which we are faced is to prevent the noise of footsteps from being a nuisance in other parts of the building, especially in the room immediately below the walker, for in a great many cases if the footsteps are inaudible in the room below they will not be troublesome in other parts.

You are probably reasonably familiar with the noise that is set up by walking on a bare reinforced concrete slab, and this is usually equally loud in the rooms above and below the floor. It is convenient to take this as a reference level of loudness, and you will, I think, agree at once that we may classify such a floor as " noisy." There is no great difference, and certainly no difference of practical importance, in the " noisiness " under impact of different reinforced concrete floors, be they thick or thin, solid or hollow, precast or laid in situ, so long as they are of a type which provides a rigid connection between the upper and lower surfaces. We may therefore group together all reinforced concrete floors into a category of " noisy " floors. The problem is how to render them less noisy to the occupants of a room beneath. The simplest expedient would be to provide a suitable floor finish applied direct to the concrete, but whatever effect such finishes may have upstairs they are generally disappointing to the listener below. Linoleum in all ordinary thicknesses, cork tiles, thin carpets and even rubber sheeting do not make sufficient difference to take the floor out of the category of " noisy." Thick pile carpets on underfelt and sponge-backed rubber flooring are more effective, particularly in deadening the tap of a hard-heeled shoe, though they do not always greatly reduce the noise of dull, heavy thuds. Terrazzo, granolithic and magnesite finishes, of course, contribute nothing, nor do layers of loose but rigid fillings such as sand, clinker, pumice, etc., nor do wood blocks or wood boards nailed to battens fixed rigidly to the concrete. Relief seems to be obtainable only by providing some sort of independent finish isolated by resilient supports from the structural floor. Wood boards and battens supported on rubber pads or on strips or layers of resilient blanket such as eelgrass or glass silk, or held in one of the proprietary clips incorporating

insulation, provide a noticeable improvement over a bare floor, and concrete floors with such finishes might be raised to a category of "fairly noisy." Better results are obtained if the "floating" finish is of concrete, and this may with effect be supported either on rubber pads or on layers of suitably resilient blanket of adequate thickness. If possible the concrete slab should not be thinner than 2 inches, and if rubber pads are used as supports the space between structural and floating slabs should not be less than 1 inch. Floating floors of 2 inches or thicker concrete on rubber pads or on glass silk or eelgrass blanket not thinner than 1 inch will not render footsteps inaudible in a very quiet room below, but these forms of construction can certainly be classed as "quiet" floors.

Another method of reducing transmission of the noise of footsteps to the room below is to provide a false ceiling, either completely independent of the structural floor, which is usually difficult, or suspended from the floor in clips, preferably introducing a resilient isolating material in some form. The difficulty here is that unless special measures are taken to insulate effectively the walls and partitions from the structural floor the sound of the impact on the floor is likely to travel down the walls. In principle, therefore, the floating floor which cuts off the sound at its source before it enters any part of the structure is more desirable than the suspended ceiling, which can at best only protect the room in which it is fixed. Nevertheless a suspended ceiling of reasonable weight (equivalent, say, to lath and plaster) may at times be very useful in combination with a floating floor.

The above remarks apply to treatments of concrete floors, the bare floor itself having been classed as "noisy," but an ordinary wood joist floor is a good deal noisier under impact (I am still considering the effect in the room below) and must be classed as "very noisy." We have said that a heavy pugging makes a useful contribution to insulation against air-borne sound; it is useful also in quietening the floor under impacts, but only just brings it out of the "very noisy" category. Light puggings, layers of quilt draped over the joists, fibre board ceilings plastered or unplastered are no help, and here again discontinuity is necessary to obtain useful improvement. If the boards are nailed to battens instead of direct to the joists a floating floor is formed which may be isolated from the joists, and which in small rooms is adequately held in place by the skirtings. Such a construction using rubber pads or thick resilient blanket as isolation certainly improves conditions beneath a wooden floor, but even if used in conjunction with heavy pugging the floor barely qualifies for the "fairly noisy" class to which reference has been made. It is very difficult to render a wooden floor quiet.

An attempt has been made in Table 2 to group together different floor constructions into five classes, but this grouping must only be taken as a rough guide.

TABLE 2.

ROUGH CLASSIFICATION OF FLOORS.

Very Noisy Floors.	1	Wood joists and plastered ceiling, boards nailed to joists, with or without linoleum covering.
	2	As 1, but with light pugging (*e.g.*, slag wool, granulated cork) between joists.
	3	As 1, but with fibre board or quilt laid over joists.
Noisy Floors.	4	As 1, but with heavy pugging (*e.g.*, ashes, clinker).
	5	As 1, no pugging, boards nailed to battens resting on thick eelgrass or glass silk blanket laid over joists.
	6	Reinforced concrete floor with or without linoleum.
	7	Reinforced concrete floor with any hard finish (*e.g.*, terrazzo, tiles, magnesite composition, asphalte, wood blocks), with or without rigid filling (*e.g.*, sand, clinker) between structural floor and screed.
	8	Reinforced concrete floor with boards and battens held rigidly to the concrete.
Fairly Noisy Floors.	9	Wood joists and plastered ceiling, heavy pugging, boards nailed to battens resting on thick eelgrass or glass silk blanket.
	10	As 1, with or without heavy pugging, pile carpet on thick underfelt.
	11	Reinforced concrete floor, pile carpet on underfelt.
	12	Reinforced concrete floor, boards and battens resting on pads of fibre board, thick felt or rubber or held in special clips incorporating resilient material.
	13	Reinforced concrete floor, boards and battens resting on slag wool, eelgrass or glass silk blanket.
	14	Reinforced concrete floor, 1 in. layer of granulated cork, 2 in. concrete screed.
Quiet Floors.	15	Reinforced concrete floor, 2 in. concrete screed on rubber pads, eelgrass or glass silk blanket not less than 1 in. thick.
	16	As 9, 12, 13 or 14, with the addition of pile carpet on underfelt.
Very Quiet Floors.	17	As 15 with the addition of pile carpet on underfelt.
	18	As 15 or 16 with the addition of a suspended plastered ceiling.

The floating finishes which improve insulation against impact noises are also beneficial against air-borne sound.

EQUIPMENT NOISES

In our discussion of air-borne and impact sounds we have accepted without question that these sounds will arise in most buildings, and that they

can only be prevented from becoming a nuisance to those other occupants who did not create them and who do not want to hear them, by providing a sound insulating structure. By far the best means of achieving quiet in buildings would be to educate people not to create noise, but this is not within the architect's province. He can, however, sometimes exercise control over a source of air-borne sound in connection with radio in flats. The wireless set is one of our greatest difficulties, but I am sure that it is so largely because of the quite unnecessary loudness at which it is frequently operated. Individual wireless sets are never satisfactory in large blocks of flats since they can only be equipped with indoor aerials and are then subject to serious interference from other electrical equipment and to the screening effect of a steel or reinforced concrete structural frame. It is therefore nearly always desirable to provide some form of central reception. Of the two alternative systems available, the low frequency or relay system has the very great advantage of enabling the landlord to control the maximum output of the individual loudspeakers. This seems to me to outweigh the disadvantage of the system, namely, the partial restriction in choice of programme, and I suggest that architects should consider very carefully with their clients the desirability of installing relay systems in all blocks of flats which they are called on to design.

In turning to those miscellaneous noises which I have classed together as equipment noises we have the opportunity to consider much more fully the possibility of suppressing sound at its source, and it cannot be too strongly emphasized that where this is possible it is always the best course to adopt.

The modern building often contains a great deal of mechanical equipment involving some kind of power-driven motor, particularly electric motors. Refrigerators, lift motors, water circulating pumps, ventilating fans are examples. All electric motors create a certain amount of noise, but for any one purpose there is nearly always a choice between a noisy and a quiet motor and where noise is of consequence the architect should make sure that a quiet type of motor is specified. Generally speaking, it is the larger and slower moving motor which is the quieter, and though the quieter motor is also likely to be the more expensive it may well be cheaper in the long run to pay more for the motor than to spend money on attempts to prevent the transmission of sound from a noisy motor to other parts of the building. Nevertheless where quiet is very important it may still be necessary to insulate even a quiet motor. It is not usually the air-borne sound emitted by the machine which is a nuisance, but more often the sound which is transmitted by direct contact with the structure on which it stands, so that machinery should be isolated from the structure by mounting it on suitable resilient supports. In this connection, however, it is not always appreciated that the design of the supports is of the first importance. If due consideration is not given to the relation between the frequency of vibration or rotation of the machine and the natural frequency of vibration of the machine on its supports, matters may be aggravated rather than improved by the introduction of the resilient material. On the other hand, if the supports are correctly designed considerable improvement will result. Sometimes, as in the case of circulating pumps, even if the pump and motor are isolated from the structure they may be rigidly connected to metal piping which will also readily conduct the sound. This conduction may be very considerably reduced if a short length of rubber tubing is inserted near the pump and although the rubber will need periodical renewal, this need not constitute more than a minor item of maintenance.

On the question of circulating pumps there is a particular choice as to the type of installation selected. The most usual form consists of pump and motor mounted in line on a single casting so that the noise of the motor is transmitted direct to the piping. Another type has the motor mounted on resilient supports above the pump, the drive being by means of a flexible belt so that the hum of the motor is isolated from the piping. This type is obviously preferable.

Noise from sanitary fittings is nearly always troublesome, particularly in hotels and blocks of flats. The noise of water flow is set up by turbulence at a tap or other outlet. It is then transmitted partly by the water, but principally by the piping almost as far as the piping extends, and at every pipe fixing sound is able to leak into the structure, and in these ways may travel over a wide area with relatively little diminution. The problem could best be overcome by installing taps which did not set up turbulence, and this is said to have been achieved in some countries. No such taps seem yet to be available in this country, however, and in that case the best method would be to insulate taps from piping by some form of rubber joint. It seems to me that it would in many

cases be preferable to renew such a rubber joint periodically rather than suffer the annoyance of the noise. Noise arises from w.c.s partly by flushing, partly by the fall of water in the waste pipe and partly by the refilling of the cistern. The noise of flushing is reduced very considerably with a syphonic pan and a well-made low-down cistern, or preferably a flushing valve. The fall in the waste pipe is not usually troublesome when the pipe is outside the building, but if it is fixed to the light walls of an internal duct, the noise may be a considerable nuisance a few floors down ; the solution is to provide reasonably solid duct walls and to insulate the pipe from its fixings, though the latter is not always easy. The noise of refilling the cistern is often the most troublesome, and is usually due to the hiss through the valve. All valves and taps tend to be noisier under high than under low water pressure and the practice adopted in many districts of serving domestic fittings direct from the main is not to be recommended. Even if served from storage tanks the noise may still be a nuisance, but it can be reduced by restricting the flow and it is nearly always worth while to provide a stop cock in the branch to every w.c. which may be partially screwed down until the noise is sufficiently reduced. The best solution to this trouble would, of course, be to fit a silent ball valve, and although the noise set up by ball valves varies very much, I have not yet found a very silent one. Another solution would be a rubber joint between the valve and the piping. This applies not only to w.c. cisterns but equally to ball valves to storage tanks.

The click of an electric light switch is often an aggravating sound. In high class installations the switch is mounted in an iron box connected to iron tubing and discontinuities may not, for electrical reasons, be introduced in the tubing system. The solution, therefore, must lie in silencing the switch itself. This is difficult to achieve with a quick make and break switch, but I am advised that although a quick break is electrically of great importance in direct current systems, it is not an essential in alternating current systems where a slow break actually has advantages. Any slow break switch can be operated quietly, and there are now on the market well designed underslung types of slow break switch incorporating small rubber buffers which are remarkably silent in operation.

Another noise which can be a nuisance is the click of a door catch. This is difficult to overcome, but at least the ordinary type of spring latch can be operated quietly by a thoughtful user, whereas ball catches and roller bolts, particularly in conjunction with steel door frames, are always noisy and their use is strongly to be deprecated.

Planning

We have discussed briefly the various types of noise met with in buildings and considered methods of preventing their transmission from one part to another. I hope I have succeeded in conveying to you that the problem of preventing transmission is complex, but that research work is steadily elucidating the difficulties. The process of elucidation is bound to be fairly slow, and we have not yet reached the stage where we can allow noise to be created indiscrimately in any part of a building and successfully prevent it from being heard in every other part by the provision of an economic sound insulating structure. We must therefore make use of every means at our disposal to mitigate the nuisance by reducing the degree of insulation necessary. One such means which I do not think always receives the attention it deserves is planning. It is not so unusual to find w.c.s and bathrooms placed over living rooms ,even in architect-designed houses ; nor to find a lift well carried up alongside bedrooms in blocks of flats ; nor to find bedrooms overlooking small, high enclosed service courtyards, bedrooms in which no one could hope to sleep after the first morning milk delivery. I do not propose to discuss this question in detail, but I would submit that noise is by no means the least of the many factors which must be taken into account in planning a building, and I would urge you to do all you can to keep those rooms where quiet is most needed as far away as possible from sources of noise.

Sound-Absorbent Materials

This paper would be incomplete without a brief reference to the part played by sound-absorbent materials.

A sustained noise sounds louder in an enclosed room than the same source of noise in the open air, for the sound builds up by reflection from the bounding surfaces of the room. A sound-absorbent material is one which reflects sound less well than a non-absorbent material (that is the definition of absorption), so that the more absorbent present in a room the less will sound build up. The usefulness of absorbents has, however, strict limitations. Firstly, it is obvious that no amount will reduce

the loudness of, say, a gramophone operating in a room below its loudness in the open air ; secondly, the sound is not reduced in direct proportion to the amount of absorbent provided and, beyond a certain limit, the further provision of absorption has no useful effect. If the noise of typewriters in a large sparsely furnished uncarpeted office with hard walls and ceiling were found to be a nuisance, then considerable relief would be derived from the introduction of a highly absorbent ceiling finish, but if the noise of a typewriter operating in a well-furnished and therefore already absorbent private office proved a nuisance then the addition of further absorbent to ceiling or walls would probably have no noticeable effect.

In certain cases then noise within a room may be reduced by providing absorbents, and this will indirectly relieve to some slight extent the problem of insulating the noise of this room from its neighbours, but it must not be thought that the absorbent linings are providing insulation. The function of absorbent surfaces, to reduce reflection back into the room, and the function of sound-insulating construction, to reduce transmission to another room, are quite different and unrelated. A sound-absorbent material by itself is not necessarily a good insulator, and indeed the reverse is more often the case, the extreme example being the open window which is taken as the standard of complete absorption, but provides no insulation at all.

Summary

It has naturally been impossible in a paper of this sort to go fully into the details of the various points raised. If you wish to pursue the subject further I would refer you to the forthcoming *Building Research Bulletin*. I think though, that I have said enough this evening to allow us to draw certain fairly definite conclusions which I would summarize as follows :—

Considerable progress has been made in the scientific investigation of noise and noise transmission and effective insulation can often be obtained where conditions are not severe and where cost is not unduly restricted. Nevertheless we do not yet know how to construct buildings, even at unlimited expense, which will prevent so effectively the transmission of sound that we can allow noise to be set up indiscriminately in any part and rely on the insulation provided by the structure to prevent it from being a nuisance in every other part. It is therefore necessary to make full use of every available method of securing quiet. This means that the architect must consider the problem of noise, not only as a constructional one, but also as a planning problem, and he must in addition take the greatest care to specify quiet equipment.

In considering the structural side of the problem, it must be remembered that sound travels by a variety of paths and the structure must therefore be considered as a whole and not in terms of individual dividing walls and floors. Above all, this must be considered from the earliest stages of design for the application of special finishes after the building is erected provides no solution to the problem of sound transmission. The present trend of research suggests that the method most likely to prevent successfully the transmission of all kinds of sound is the provision of much greater discontinuity in buildings than is at present customary. The effectiveness of the full and proper application of this principle is now being investigated with promising results. Whether or not it is practicable remains to be verified for it implies radical changes in building methods.

VOTE OF THANKS

The CHAIRMAN: I now call upon the Rt. Hon. Lord Horder, K.C.V.O., M.D., Chairman of the Anti-Noise League, to move a vote of thanks to Mr. Morreau.

The Rt. Hon. LORD HORDER: It is very good of you to ask me to propose this vote of thanks. Strictly speaking, I am not sure that I am competent to say whether Mr. Morreau deserves a vote of thanks or not, because I am a man who sticks to his last, or tries to do so, and your technology is not my technology. I should hesitate, therefore, to be as free in discussing an academic paper, as this is in the main, with you as my patients are sometimes in discussing medicine with me!

There is, however, one aspect of your work—as perhaps there is, to be a little indulgent to my patients, in fuller measure in mine—to which I can refer, and that is the human element. Technology is all very well with you, as it is with me, but it is technology guided by the human factor which is the key to so many situations. So far as health is concerned, of course, I could easily digress and remind you that—always supposing that the perversity of human nature does not try an experiment in the other direction, as we are witnessing at the moment—a great deal of disease has come under control. In the same sort of way, I suppose that a great many of your problems have come under control. In my own case, health being my subject, I have to look for ways of making people not so much free from disease but more healthy; and no doubt you have come to a point where you have to look for means by which buildings, whether for work or for play or for ordinary domestic purposes, can be better adapted to the amenities of life.

I am not going to talk to you about health this evening, although it is obvious that the overlap of health and the work of the architect is very great. There are such matters as ventilation, warmth, lighting and so on in which the two overlap. I suppose that, next to food, shelter is the most important basic necessity of the human animal, and therefore, as I say, health and the provision of shelter in the fullest sense have a great deal in common.

You have reminded me, Mr. Chairman, that I am Chairman of the Anti-Noise League, and I want to thank you for inviting me and also for inviting some colleagues of mine on the Council of the League, including Sir Henry Richards and Commander Cave-Browne-Cave. I do not include in that category my friend Mr. Hope Bagenal, because he is one of you.

So far as this League against needless noise is concerned—because that is what we stand for—the very fact that the question of noise in buildings has been given a platform at the Royal Institute of British Architects gives us intense satisfaction, because we shall feel that this matter can be taken to no higher court. I have always supposed—though Mr. Morreau mentioned it a little late in his paper, I thought—that all noise which is really a nuisance and which strains our nervous system, as it certainly does, is a matter of bad planning or of no planning, or else of bad construction and—well, I suppose there is such a thing as no construction! I have always thought that, therefore, it could be avoided. What interested me most of all was that Mr. Morreau stressed the basic point of checking noise at its source, and that, I think, is something which we have to bear very much in mind.

Of course, the source of noise again introduces the human factor. Either through selfishness or through thoughtlessness or through ignorance, the human being produces the noise, and then tries—all too ineffectively—to devise methods of dowsing it; and we have heard this evening what a difficult and elaborate business it is to dowse the noise which we make. With all the education in the world, and with all the efforts to make persons less selfish and less thoughtless in this matter, there really does seem to be need for designs and devices and materials which will render buildings foolproof in this matter. We hope that the public will make increasing demands in this direction, and you can help us enormously. You can say to your client, for example, "Of course, you will want this room or this house to be as noiseless as possible," and, if he denies the soft impeachment, you can express just enough surprise to enable him to think again.

I have been exhorted by at least two communications to be brief and not to occupy more than five minutes. I have been four and a half minutes, and I should like my colleague, Mr. Hope Bagenal, who is going to second this vote of thanks, to be allowed the extra half-minute. It gives me great pleasure to propose a vote of thanks to Mr. Morreau for what seemed to me to be an extremely careful paper.

Mr. HOPE BAGENAL [*A.*]: I have listened to and read Mr. Morreau's paper with admiration and I want to second this vote of thanks with great pleasure and for a great many reasons. First of all, I have often visited Mr. Morreau at the Building Research Station and I want to thank him for discussing personally these difficult problems. I am sure that there are others here who would like to thank him on that score also. It was carrying on the very fine tradition of the Building Research Station. Mr. Morreau

has also been carrying on the acoustic research begun many years ago at the Building Research Station by my old friend, the late P. W. Barnett. If Barnett were here to-night I think he would wish to extend thanks for good results and for the really admirable summary of long and difficult research work which we have been given. I know how difficult it is to make the kind of generalisations which Mr. Morreau has been making for us to-night. The paper is most valuable and useful and, if I were to take a general view, I should say that the author's two tables of degrees of approximate insulation are just the sort of practical thing which we need.

I notice that Mr. Morreau spoke of approximate insulation in decibels and he did not speak of average insulation. I should like to say that I highly approve of that. The method of averaging out reduction factors as between resistance to low notes and resistance to high notes seems to me to be misleading, because some partitions are very efficient for the high notes and not at all efficient for the low notes. What we have to get at seems to me to be the weak link in the armour of any partition, of any type of wall, and that weak link may appear when the partition increases in area beyond a certain drum dimension. When it becomes large that weak link may appear, or when it responds to some low tone, and what worries me, quite frankly, is that thin double partitions must be reduced in stiffness as they increase in size in a way that the 9-in. brick wall is not reduced in stiffness. I should like Mr. Morreau to give us his views on the loss of efficiency in partitions when they get beyond a certain size. It was for that reason that I thought it dangerous for Mr. Morreau to put the double 21-oz. glass in the same category as the 9-in. brick wall. The reason why old-fashioned people like myself are so fond of a 9-in. brick wall is that you can rely on it for a certain real performance. You can rely on it to give its 50 decibels for the low tones and 55 for the high tones, and even when it is a big wall of large dimensions that holds true, and it holds true also for low tones.

Mr. Morreau's Table 2 for floors is, I think, admirable, but I wish he could have pilloried the 4½-in. filler-joist floor, which is certainly, I should say, one of the very noisy ones, but which is used by large numbers of architects for workmen's dwellings and cheap buildings generally. I notice that Mr. Morreau did not give any units for his categories of floors and I think myself that it is difficult to measure impact noises on floors by the same units as air-borne noises are measured through walls.

I have the very greatest admiration for the phon. His creator is with us to-night. I think of the Phon as an English knight who has rescued Decibel from a really very compromising situation. I do think, however, that for measuring taps on floors we want to think of a different unit.

I wish very much that the author had had more time to give us his views on planning. He gave us a number of very important generalisations, but I should like, if I may, to add two which have emerged from the work of the Anti-Noise League under the ægis of Lord Horder and Sir Henry Richards, who are with us to-night. One is in regard to the increasing practice of building wards for private paying patients in general hospitals. This means that we must, as architects, take much more trouble about sound insulation. The complaints are coming from the private patients' wards. Complaints have never come very much from public wards for obvious reasons : the people there are interested in what is going on ; but in the private patients' wards they have nothing to do but listen for noise. My second generalisation, also with regard to hospitals, is that if the main kitchen is now to be put above rather than below the wards, and especially if it is to be put above the private patients' wards, then special precautions have to be taken for sound-insulating the floor, because the main kitchens of hospitals are very noisy.

With regard to workmen's dwellings, I should like to say that the Anti-Noise League have been concerned with the work on some workmen's dwellings in Shoreditch, designed by Mr. Dower. I had hoped that Mr. Dower would be here to-night and be able to talk about them. There an enlightened building committee gave to their architect the power to spend up to another 10s. per sq. yd. on the flat floors for sound insulation, provided they could be made bug-proof. As a result of that, certain floors have been tried and tested. They have not given in decibel measurements as successful results as we could hope, but there is no doubt that the tenants are very grateful for them. I was talking to Mr. Dower this morning about those flats, which I visited myself six months ago, and I asked him whether the tenants were still pleased. He said that they were and that the only thing which they complained about was the noise coming through the untreated portion of the floors, in the kitchen and the lobbies. The soundproofing extended to one main bedroom and to the parlour, and those rooms were made soundproof as to their floors, but for the remainder the ordinary construction was used. It seems to me most important for workmen's dwellings to make at least the parlour and the main bedroom floors soundproof.

I wish to conclude by formally seconding the vote of thanks to Mr. Morreau for his admirable paper.

Supporting Speeches and Discussion

Wing-Commander T. R. CAVE-BROWNE-CAVE, C.B.E. : I should like to ask for a little more information about the noises connected with water pipe systems. Most water noises result from the formation of cavities filled with air or vapour at low pressure. The noise is, I believe, caused as these cavities close and bring the surrounding surfaces into sudden contact. The pressures so formed may be very high indeed.

Noises of this nature can best be reduced by avoiding the presence of air and the conditions which tend to promote the formation of cavities. Water speeds should be kept as low as possible and turbulence avoided by every reasonable means.

It would be interesting to know how much of the noise is transmitted by the pipe and how much by the water. The combination of pipe and water forms a channel along which sound can be transmitted with remarkable efficiency. Speech in one room in which there is a hot-water radiator can often be heard quite distinctly in an adjacent room by placing the ear to the radiator. If the sound is conducted by the pipe rather than the water isolation would almost certainly be achieved by the inclusion of quite a comparatively short length of flexible hose.

The noise caused in flushing cisterns is, I believe, also due to the formation of cavities on impact of the stream of water upon the surface of the water already in the cistern. I have experience of certain filling valves which are quite satisfactorily silent. They consist of normal float operated plungers arranged in a casing so that the water is discharged below the water level in the cistern and the formation of bubbles thereby precluded. The noise in such cisterns is probably emitted to the air through the flat sides of the cistern and from the water surface itself.

I should like to ask how far the noise emitted by a vibrating partition is reduced if the surface is covered with absorbent material of the type which is so very effective in reducing the reflection of sound waves.

The type of floor in which a loaded wood covering is supported from a concrete floor by means of flexible pads is very satisfactory as a sound insulator. Its effectiveness depends, I believe, upon the pads being designed so that the natural period of the floor supported on these pads is sufficiently low. I have recently had experience of a floor in which the wood covering was supported on flexible pads, but was not loaded sufficiently to make the natural period low. Transmission of sound through the floor was certainly small, but the noisiness of the floor in rooms of that level was most objectionally great.

Sir RICHARD PAGET, Bt. [*Hon.A.*] : My interest in sound arose during the war, when we were principally concerned not with preventing noises from being heard but with hearing noises which other people did not want us to hear—rather the opposite direction. One principle, however, which was noticed then has come out, I am glad to see, in the very interesting paper which has been presented to us to-night, and that is the possibility of preventing the transmission of noise by resilient surfaces. It is fairly obvious from the data given that you cannot do very much with the building itself. You can reduce the noise a little by using various fancy devices, such as false ceilings and false floors, but all of those give you very little return for your money. The impression made on my mind was that what one really wants to do is not to make alterations to the structure but to try, if possible, to cut off the noises at the source. It is very much easier to cut off the noise made by a small weight than by a large one : for instance, a thick layer of felt, such as can be put under a typewriter or a gramophone or a wireless set, or even under a piano, can cut off the noise at the source so that no important vibrations ever get to the floor, because, as Mr. Morreau has clearly explained, a really thick carpet does prevent noises getting to the floor. Linoleum does not and cork does not, but a really resilient surface will do that. For instance, a platform supported on light springs will cut off an enormous amount of sound from reaching the floor below it.

I think, therefore, that the problem is not so much one for architects as for those who are noisemongers, the people who make the noises, either instrumental or otherwise. The real invention which seems to be needed is a cheap substitute for a very thick carpet. If the rubber manufacturers could make something which could be put under a cheap carpet, so that it then became in effect a very thick carpet, no noise could get through it, and that would overcome some of our problems.

A word with regard to the noises of water pipes. King David must have had experience of that, because in the psalms he speaks about " the noise of the water pipes," and in my youth I thought I would like to hear those noises, because our water pipes in London made funny noises which I heard as a boy. Anyhow, the problem is as old as King David, but it seems to me that it is not primarily one for architects. What architects should insist on is breeding a race of scientific plumbers !

Dr. A. H. DAVIS (National Physical Laboratory) : It has been my privilege, through my connection with the National Physical Laboratory, to have worked with Mr. Morreau on the question of the acoustics of buildings and I should like to add a word with regard to the complexity of the problem, to which Mr. Morreau has referred so ably. We have to consider, in the problem, transmission through partitions, through floors and through the structure, and to realise that the last-named noise may be conveyed to considerable distances. Primary importance attaches, however, to the noises coming through walls and through floors—for example, coming from the man next door or from the youngsters overhead—for if you cannot prevent noise transmission from one room to the next room you cannot succeed with the problem. However, when walls and floors have been studied, there is also, as Mr. Morreau says, the question of the structure to take into account. Any of you who are unfortunate enough to have at home, on the other side of a party wall of your house, a neighbour who uses a loud wireless set can verify the importance of structural transmission for yourselves. If you put your ear to the party wall you will hear the wireless set very plainly, but if you put your ear to the flanking walls you will also hear it almost as plainly. Consequently, if you attend to the insulation of the party wall alone you will not succeed in stopping the noise from getting into your room.

The problem, therefore, is a complex one. If it is so complex in everyday practice, you can imagine how complex it must be to study the noises in the laboratory so as to get

unambiguous results for the insulating values of partitions and floors—to get, in fact, the kind of results which Mr. Morreau has shown in his slides.

It therefore comes about that the facilities which we have at the National Physical Laboratory—and which, by the way, are being extended owing to the demand for this class of work—have been very carefully designed to exclude miscellaneous noises and to ensure that when we are measuring the sound which is passing through a floor or partition, the measurements are not vitiated by sound which is passing along the flanking walls or arriving via the foundations. Consequently, those who are interested in this problem might do well to glance at descriptions of our chambers and of our facilities, because they will be able to note the types of precautions which have to be taken to stop each of the many and various interfering paths.

With regard to the difficulty, to which Mr. Hope Bagenal referred, in expressing *average* efficiencies of walls in decibels or phons, there is often, I think, a better justification for averaging than appears at first sight. It so happens that although single partitions are normally least efficient against low-frequency notes, the ear is inefficient also. It so happens that often the average attenuation, in decibels, over the frequency range gives a very good figure for the attenuation in phons which occurs for medium notes and low notes ; in fact, it gives a rough estimate of the minimum attenuation in phons afforded by the partition. Mr. Hope Bagenal is quite right, however, in querying the example which he selected, for it is not altogether satisfactory to compare a double window with a single wall on the basis of an average figure alone, double partitions being specially liable to transmit low-frequency notes. I think you can compare one double wall with another double wall fairly satisfactorily from averaged results and that you can compare a single wall with another single wall, but if you compare a double wall with a single wall on the basis of averaged results you have to bear in mind that the double wall will rather let you down with the low tones.

Dr. J. E. R. CONSTABLE (Scientific Officer, National Physical Laboratory) : It has been apparent from this very interesting paper that there is a great gulf between what is acoustically desirable and what is practicable in ordinary life. It has also been borne in on me in the work which I have been doing that it is a very uphill task for those who are trying to develop better methods of sound insulation. At the National Physical Laboratory we have measured some hundreds of partitions, and, as a result, the principles which should be adopted for sound-insulating construction have emerged. We may attempt to use these results in designing a partition, but then have the problem of persuading an architect to use it. After trying a little, we may find an architect who is both bold and trusting, and who will accept the drawings and designs which we offer him. After that, those drawings have to encounter much more formidable enemies. There are the clerk of works and the builder's foreman to consider, and that is where a good deal of our work breaks down. The designs are very nice on paper, but it is necessary to take into consideration the conservative attitude of the British workman, who has it in his bones to prefer a good, solid building. If flexible supports are proposed he does not regard them as being quite the thing.

The experience which we have had is rather similar, I often think, to that of Edison. I understand that when Edison was developing his carbon filament lamp he made something like 50,000 experiments, and at the end of them he did not seem to be any nearer to obtaining the ideal filament than he was at the beginning. His assistant became very depressed and said, " Look here, sir, 50,000 experiments and no result at the end of it ! " Edison replied, " No result be blowed ! We know 50,000 things that will not work."

As Dr. Davis has just told you, we started work at the National Physical Laboratory by trying to develop methods of producing sound-insulating partitions and sound-insulating floors, as they were the obvious things to attempt. We now, I think, know the principles which have to be employed in producing either sound-insulating floors or sound-insulating partitions, and have only to produce some practical solution. The co-operation of the architectural profession has been very valuable in this connection. We are now extending our work to examining the problems of transmission through structures. Mr. Morreau spoke of this, and said that figures in regard to flanking transmission were not yet available, but figures are becoming available. The architects have been very kind to us and have lent us buildings from time to time—I do not know whether the owners have always known about it. We are tackling the problem in a general sort of way, putting a loud-speaker in one part of the building and measuring how much sound reaches every other part.

To take a simple case, Mr. Morreau spoke of two rooms next door to each other. We find that as a general rule it is no use making the partition between the two rooms more sound insulating than the flanking walls and floors. If you have 9-in. outside walls and, say, 6-in. concrete floors, it is no use at all making the partition between the rooms any better as an insulator than a 9-in. brick wall ; you are wasting your money if you do any more. In fact, it is doubtful whether it is worth making it any better than a $4\frac{1}{2}$-in. brick wall in that case, because so much sound comes from the side walls and floors.

Extending the work a little further, we have had six rooms in a row and have put a loud-speaker in one room and measured the sound in all the other five. We found, at least in one building which we measured, that the sound in the sixth room was not so very different in loudness from the sound in the second, and this has a bearing on planning. It is all very well to plan your rooms so that the noisy room is not next to the room which is designed to be quiet, but a little more than that is needed ; you have to be sure that your flanking walls and floors are not common either. I speak as a physicist, and I do not suppose that the architects will look on that idea with very much favour ; in fact, I do not see myself how it is to be done. Possibly discontinuities in the structure will provide the solution.

Mr. RAYMOND WALKER [*L.*], referring particularly to research on temperature movements in structures which pointed to the advantages of discontinuity in structure, suggested that research on other aspects of building science and materials might profitably link up with acoustic research.

Mr. L. H. BUCKNELL [*F.*] : Dr. Constable made some rather disparaging remarks about the architect and I am wondering how far what he said is true. I live in a small village in the country where, three doors from me, someone has a very loud loud-speaker. If Dr. Constable can tell me any means of stopping it I should be very glad to hear it. I do not think it is true that architects are ignorant of what

should be done in this connection, but what we want to know from the Building Research Station is what we can do. Mr. Morreau will probably admit that it is extraordinarily difficult to say precisely how one should build to avoid this sort of noise nuisance. I think that Mr. Morreau and Mr. Hope Bagenal would find it very difficult to say "You must do this or that, and no other; you must use a 14-in. wall, or a 9-in. wall, or double glass, or whatever it may be." I do not think Dr. Constable was quite fair in saying that we are not cognisant of what ought to be done; but we have to consider the weight of thick partitions and the cost.

Mr. V. W. RAYDEN: Mr. Morreau stated that it was generally known that weight and weight alone is the factor which affects the sound resistance of a partition. That may be generally known, but I think we would be justified in querying it to some extent. The rigidity of the partition may not be so important a factor, but it is a very important one, and the internal structure of the building material itself may have a rather more serious bearing on the subject than appears at present from the mass law. I take it that the mass law is purely a generalisation based on empirical observation. The various speakers who have followed Mr. Morreau have emphasised the fact that this problem is extremely complex, and I think that it is reasonable to assume, therefore, that the fundamental physical laws which affect this problem have not yet been examined in very great detail.

I should like to be informed whether any work has been done in a systematic way with regard to those light-weight materials which, when considered in relation to the mass curve, appear to lie rather above that curve, and of which it was said that they were just about on the limit of experimental error. Has any work been done to explore that field? For example, have a number of light-weight partitions of increasing thickness been examined and compared with the results of denser partitions of equal sound resistance when they are compared for particular weights?

It struck me as rather strange when the example of the double window was quoted; there we are told that a double partition of 21-oz. glass was equivalent to a single 9-in. wall. The total weight of two leaves of 21-oz. glass is very much less than the total weight of a 9-in. wall, and yet the insulation is supposed to be the same. It seems to me, therefore, that there is a good deal of doubt about these generalisations, and that a great deal more work is required before they can be accepted as being absolutely conclusive.

Mr. EDWIN SMITH [*F.*]: I should like to ask one question. What is the effect of varying the size of the air space in a double partition, with no other alteration?

Mr. C. J. MORREAU (*in reply*): There has been an enormous number of questions fired at me, and if I tried to answer them in detail we should never get to the buffet! With regard to Mr. Hope Bagenal's point about the 4½-in. filler-joist floor, I class the filler-joist floor in the same category as all the other reinforced concrete floors, all about equally noisy. He made one statement which rather surprised me, coming from him, with regard to kitchens in hospitals; he said that if the kitchens were placed above the private wards certain precautions must be taken. I should have been far less surprised to hear him say that kitchens must, of course, never be placed above the private wards.

With regard to the conduction of sound along the water pipes, there is evidence that the insertion of an adequate rubber joint is very effective in reducing transmission, from which I conclude that, although sound does travel along the water, a great deal more travels along the pipe. The point was made about ball valves that they should have an extension pipe which discharges below water level. Personally, I should say that no ball valve was any good without it, but a tremendous number of ball valves having extension pipes are still troublesome, for the water leaks out at the wrong corners and sets up hissing noises.

I do not think there is any evidence that a wall finished with a soft surface emits less noise than a wall finished with a hard surface.

Dr. Davis took me to task for comparing single with double walls. As a physicist he could, if he had wanted to be unkind, have called attention to a great many more statements which I have made to-night which are not strictly accurate. No doubt the subject has seemed complex enough to you, but I can assure you that there are numberless further complications which I have been careful to avoid, and in simplifying things of this nature certain inaccuracies are bound to creep in. I am fairly certain, though, that I have not told you anything misleading except perhaps in regard to this one point. In attaching the same single figure to the insulation afforded by double windows as I attached to certain single walls I ought no doubt to have warned you that you might by comparison find the double windows disappointing at low frequencies, and I am very glad Dr. Davis raised the point.

Mr. Bucknell wants to be told exactly what to do. Well, that depends on the circumstances of his particular problem, but if, as I suspect, he wants to know what to do to render a building proof against all sound transmission, then the only answer I have was given in my original warning that I didn't know. But I hope Mr. Bucknell will have been as heartened as I am to hear Dr. Constable say that he now knows all the principles governing the problem. I am quite sure Dr. Constable would not have said that a year or two ago, and you will all agree that a very good way to start solving a problem is to discover its underlying principles. He says he does not see very clearly how to apply them, but I do not despair that the required inspiration may yet come. Even if the architect has not yet been told all he wants to know about sound insulation, I think we ought to be very grateful to Dr. Davis and Dr. Constable and their colleagues at the N.P.L. for having discovered the principles—this is a great advance and an excellent basis for future development.

Mr. Rayden suggests that there may be some materials which by virtue of their rigidity or internal structure do not comply with the mass law. I have heard this suggested before, and if Mr. Rayden will produce evidence that there are materials which, when built into a single partition, do disobey the mass law to an extent with which I personally am concerned, I should be more than interested to know about them, but I should not be interested in differences of two or three decibels, which have no practical significance.

The last question was with regard to the effect of air-space in double partitions. The matter is somewhat complex. In the type of double partition such as the double window, where there is little or no linkage round the edges, the air-space is a vital factor and an increase of air-space provides a very considerable increase in insulation; but where the main transmission across the double partition is by way of the edges, as in the case of nearly all masonry or light block partitions, it does not much matter what the air-space is. In the case of ordinary double partitions, therefore, the width of the air-space is not critical, but if we could have really efficient edge insulation, then the air-space might become important.

In conclusion, I should like to thank Lord Horder and Mr. Hope Bagenal for the very delightful way in which they proposed this vote of thanks, and to thank you all for coming here and listening to me so patiently.

Exhibition of Modern Architecture

An exhibition of modern architecture organised by the M.A.R.S. (Modern Architectural Research) Group will open at the New Burlington Galleries on 11 January 1938, where it will run for three weeks. A section will afterwards be included in the Building Exhibition at Olympia next autumn and it will also probably be shown in other parts of the country.

It was originally planned to take place last summer, but the Group found that the organisation needed to make the exhibition as comprehensive and as thorough as they wished necessitated its postponement until January.

Plans for the exhibition are now well ahead and show the result of the Group's work over the past few years. It demonstrates by drawings, photographs, models and statistics how changing conditions in every branch of life and activity should logically produce an architecture suitable to them. It is intended to encourage in the public, and in the building public particularly, an interest in contemporary architecture: and to show how much fuller advantage might be taken of the great advances that have been made in science and building technique.

Though it is not a trade show, the technical side of the exhibition will be of great interest. It will show, among other things, the effect on architecture of the rapid development of industrial production during the past few decades, and will include special demonstrations of technique grouped under headings such as: standardisation, methods of mass production, the modern principle of assembly on site (whereby an increasing proportion of the fabric of the modern building is actually constructed in the factories), utilisation of new materials, etc.

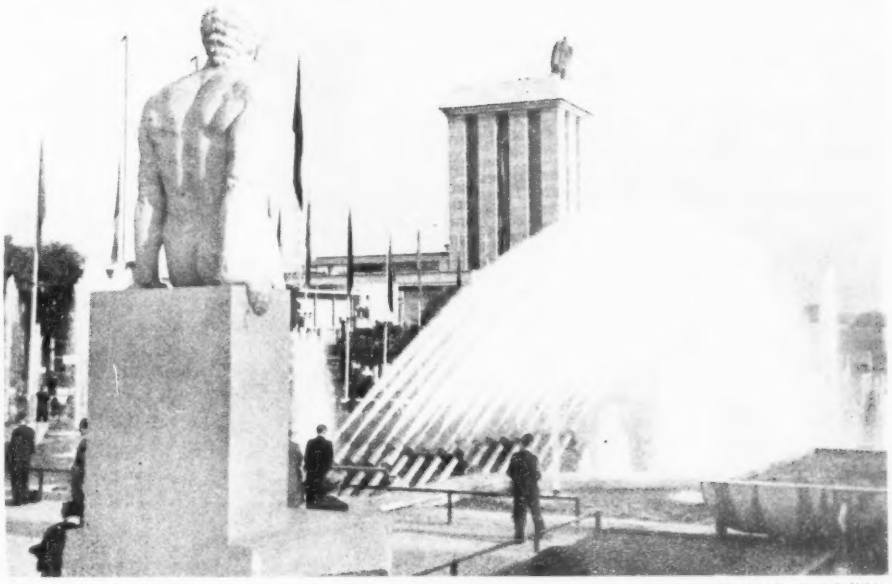
A particularly interesting section deals with the effect of scientific experiment on architecture. Timber is taken as a typical example of new uses discovered by the scientist for old materials. Besides being cut and sawn to be used as joists or beams or boarding, it can be unrolled to form plywood, and veneers pulverised to form insulation board or bent to make furniture. The invention of plywood and veneers has solved one of the age-old problems of the architect—the lining of walls with wood. Examples of new materials, such as plastics, glass bricks, glass wool as acoustic absorbent, aluminium foil as insulation, and photo-murals as decoration will also be shown.

Further technical sections deal with the engineering side and show how it is now possible to design structures to meet any combination of stresses, thus simplifying the fundamental problem of structure since the days of Stonehenge—the question of span. Instead of narrow openings placed in length of wall it is now more economical to have them spanning the whole width between the points of support. The result is the possibility of big windows. Instead of a forest of columns it is possible to have a vast roof carried on one or two slender points of support, and the walls need no longer be carried right down to the ground. The generally accepted notion that a wall supports the ceiling and a ceiling supports the floor above is no longer universally true. Suspension has replaced support; the hung wall and suspended ceiling result, and lightness and grace are the modern architect's characteristics instead of solidity.

Illustrations of design and technique will be drawn from abroad, as well as from this country; it will not be only an exhibition of work of members of the Group.

A series of lectures of various kinds will be arranged in the exhibition gallery for the general public, for students, and for the architectural profession.

It should be emphasised that technique, though it might be called the basis of architecture, is not the whole of the exhibition, as its purpose is to familiarise the public with the latest results of modern architecture—the ends for which technique is only the means—and to demonstrate the characteristic beauties of modern forms and materials which can be properly brought out by linking them with the architectural demands out of which they grew.



[Photo by Bernard J. White

SPOTLIGHT ON EUROPE

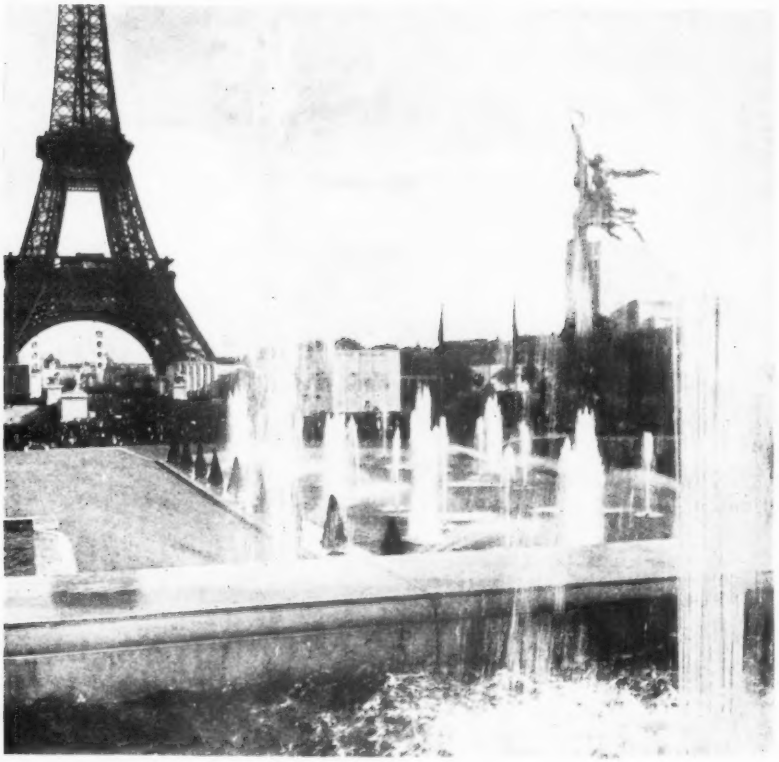
Mr. Talbot Hamlin, the librarian of the finest collection of architectural books in the U.S.A. —the Avery Library, Columbia University—came to Europe last summer to study European libraries and visit European buildings. A long letter which he sent to an English friend seemed to be so full of penetrating, lively comment that though the letter was not intended for publication we have been able to persuade Mr. Hamlin to allow us to print parts of it.—ED.

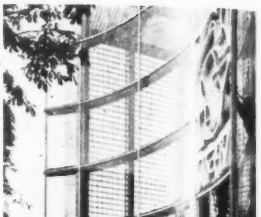
". . . Our trip was frightfully busy and most interesting. I hope the library part was fruitful; I'm still at work on the report, which is running to greater and greater length as I write. . . . As you will see, I have many nice things to say about the R.I.B.A., which is without doubt the best and most useful library of its kind in the world. . . . The places I went to:—LONDON: R.I.B.A., Courtauld, Victoria and Albert, Soane. PARIS: Ecole des Beaux Arts, Bibliothèque Nationale, Bibliothèque de l'Institut. MUNICH: Bayerische Staatsbibliothek, Architektur Sammlung of the Münchener Technische Hochschule. VIENNA: The Albertina. FLORENCE: The Uffizi. ROME: Istituto di Archæologia e di Stria dell'Arte, Deutsches Archäologisches Institut, American Academy in Rome, Vatican.

"We had, altogether, ten days in London, twelve in Paris, four in Munich, four in Vienna, four in Florence, and nine in Rome; in addition, as pure vacation, two days in Innsbruck, where we met some Columbia friends, one magic day in Venice, and four days in Naples before we sailed, so we could see Capri and Herculaneum, at least. Of course, we did some sight-seeing everywhere, especially in Paris and Rome, and took in some music in Munich (a lovely concert in the court of the Hofburg—Mozart and Beethoven), a Heuriger and much café-sitting in Vienna, a concert (Mascagni conducting) in the Basilica of Maxentius in Rome, by moonlight, and trips to Ostia and Tivoli. As you can imagine, we didn't have much time for being bored!

PARIS EXHIBITION

"I loved the Paris Fair. We saw it extensively and intensively, and the November *American Architect* will





Above : Saint-Gobain Pavilion, by MM. Coulon and Adnet
[*Photo from "The Architectural Review"*

Left : Paris 1937.
[*Photo by F. R. Yerbury*

have an article giving my impressions, and some photographs I took and some diagram-sketches, so I needn't go into detail here. Its extraordinary gay exuberance wholly delighted me, and made up—and more—for its difficulties of plan. I think the whole treatment of water and light superb—the Trocadero fountain perhaps the most magnificent thing ever done with water—and the *fontaines lumineuses*—and trees—and colour—and glass. I liked especially the national buildings of Poland, Finland, Czechoslovakia, Holland, Austria, Hungary (in something that order), and even liked the Belgian building, which was much the best of the big ones. Of other buildings I liked the Rubber Building, the Pavilion de Bois, the Pavilion de Yachting, the Pavilion des Arts Feminins, and the Porte and Pont de l'Alma. And, of course, the most brilliant building of the whole fair, the Pavilion de St. Gobain. What a fantasy in glass that is ! I liked its glass ventilating ducts and louvers. I only wish we in New York could look forward to such exuberance and imagination.

The Pavilion de l'Elegance, by MM. Aillaud, Kohlmann and Ventre
[*Photo from "The Architectural Review"*

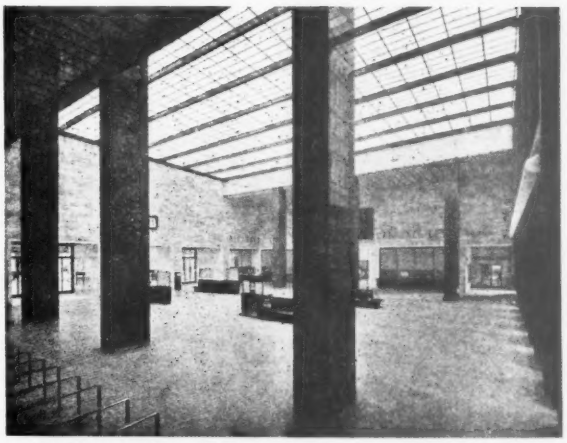
and such a sense of art dominating everything. . . . At Paris, I even liked some of the frankly surrealist buildings, like the Pavilion de l'Elegance Feminin. It was all so alive.

ITALY—New

"I was disappointed, rather, in Vienna—but simply knocked over by much of the recent work in Italy. It is superb, much of it—it makes one realise what wonderful building and facing materials Italy has. It must be convenient to have a marble quarry of different colour or veining in almost every other town! But besides its lavishness of material, the best of it has also nobility in conception and it is all *beautifully detailed*. It should wear well. I especially liked the interior of the Florence Station (the exterior is a bit dull) and the Naples Post Office, both inside and out, which is by way of being one of the greatest of recent public buildings anywhere. A lot of the new Roman apartment houses on the outskirts are good, too. Thank heaven they've forgotten the terrible neo-classic-baroque-modernist they were building in the early 1920's.

ITALY—Old

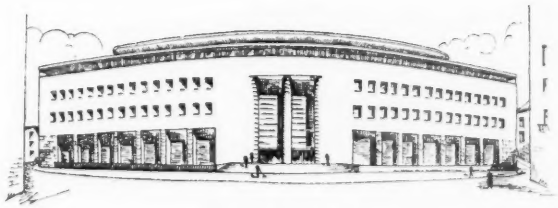
"I was also surprised and impressed anew by Roman architecture. I went over Ostia, the Villa of Hadrian, Herculaneum, and some of the recently opened work in Rome with great care, and I've come to the conclusion that the Roman architects were among the most brilliant, experimental, 'functional,' the world has ever known. Not more than 10 per cent.—if that—of the work is what the history books write about. The common spirit of what I saw is direct simplicity, beauty of proportion, daring invention, fresh and exquisite and experimental detail applied with restraint. Much of it looks like what we call 'Romanesque' (only well-built); much of it is extremely modern in feeling. 'Orders' are the exception, except in temples and such like. Brick is beautifully detailed, and usually exposed, etc., etc., and all these sites abound in fragments of beautiful detail, unstudied and uncared for, which don't fit any of the usual classifications. (That's probably why nobody has bothered about them.) It's time somebody did a new book on Roman architecture absorbing all this. We're still—or the scholars are—under the domination of 19th-century Romantic Greek worship, that has blinded us too much to what others have done.



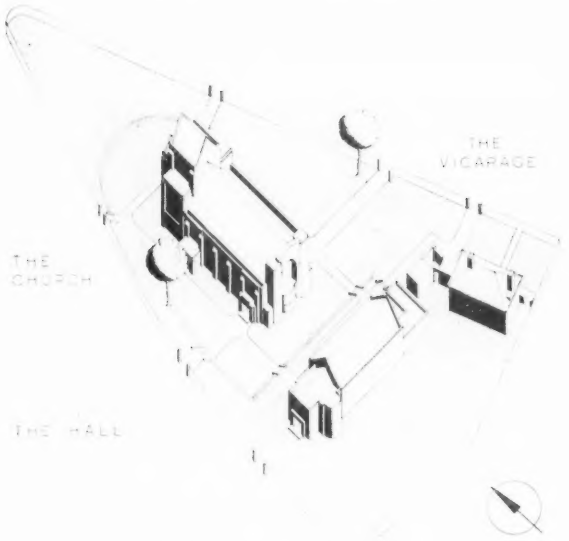
The Florence Railway Station

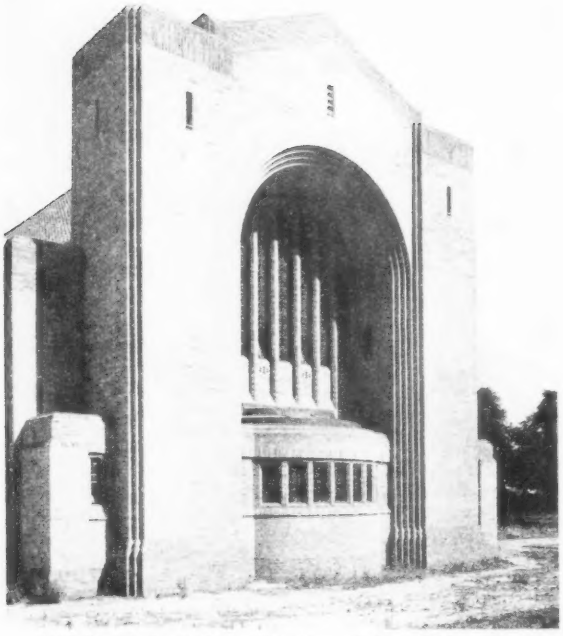
CLASSIC

"I had another unexpected reaction to Europe as a whole. It was the all-pervading sense of Classic background—not only in architecture—in Romanesque, even in some French Gothic it can be felt—and then came the international Renaissance—Baroque, Classic, Revival movements—everywhere. It seemed to make me feel as if the whole Romantic movement were just a sort of temporary rash on the surface of culture. . . ."



Naples Post Office





The Church. South End. The large window lights a gallery

ST. CATHERINE, MILE CROSS, NORWICH

A CHURCH GROUP

Architects: Alban D. R. Caröe [A.] and A. P. Robinson [A.] of Caröe and Passmore [FF. & A.]

The Group

This scheme forms a complete group of ecclesiastical buildings, consisting of church, hall and vicarage, planned as a whole at one time, by one architect. The site lies between two main roads which meet at an acute angle and with the continuing road form a "Y" junction. The tower of the church has been placed on the axis of the continuing road.

About 1925 the Norwich Corporation developed a large housing estate at Mile Cross, and the population rose from a few hundreds to about 8,000. The foundation stone of the church was laid by Her Majesty Queen Mary on 2 February 1935; the church was consecrated on 12 November 1936; the hall was opened in November 1937; the erection of the vicarage will begin early in 1938. The whole scheme is the gift of Dame Violet Wills.

The Church

The church, which seats 479 (368 nave), has narrow passage aisles. These pass through brick piers which support the reinforced concrete arched trusses of the nave roof. Cross barrel vaults between these piers form a series of deep recesses which take the place of continuous aisles. The concrete trusses support wooden purlins which on the three visible faces of the ceiling are framed into panels. The flat subsidiary roofs are of reinforced concrete. The tower is placed over the choir, which is well lit by windows placed high up. There is a gallery at the west end. A feature of the design is the deep recessing of windows, which gives good lighting without glare.

The wall facings are silver-grey bricks with grey-brown bricks as dressings; the pantiles are a matt blue-grey colour, and are made of Staffordshire blue clay. The joinery, principally oak, has an unusual amount of carving. In this, flat, intricate geometrical patterns are dominant, and contrast well with plain wall surfaces. The pulpit and reading desk are balanced on plan and similar in design; both are entered by short stairways which pierce the piers behind them. The gallery front bears the Royal Arms and the Arms of Queen Mary.

The central portion of the reredos is in Beer stone, and the surrounding frame is of blue Polyphant. The latter stone, although known and used for centuries, was difficult to obtain for this church since the quarries are now closed.

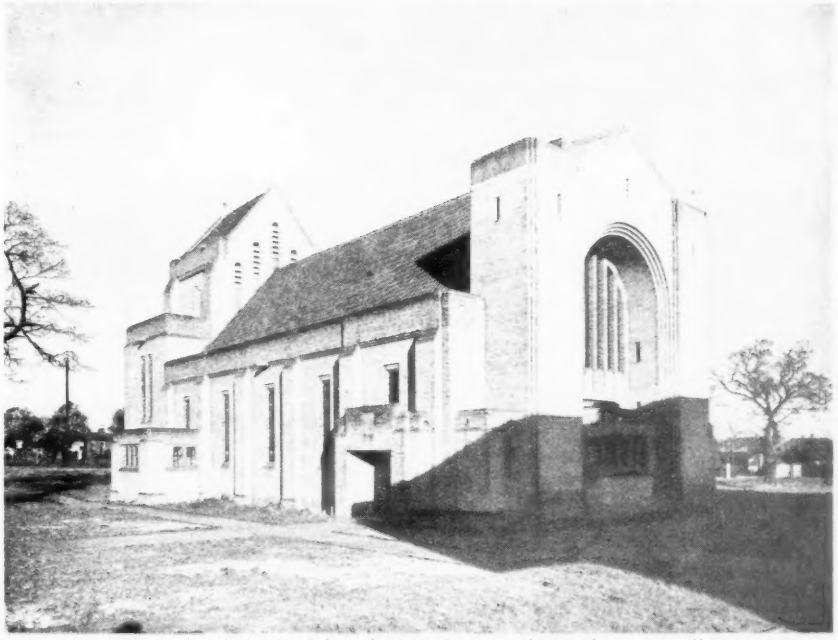
In colour the interior depends mainly on the effect of weathered oak in contrast to white walls, though the roof panels (of wallboard) are light buff, and the light fittings are gaily coloured green and gold with brackets painted red, gold and grey. Colour has also been used in the high ceiling of the tower over the choir, the beams being painted with blue and white, and red and white chevrons. A small wooden barrel vault over the sanctuary is enriched with gilding. The white and blue reredos makes a good climax to the whole.

Two spiral stairs of unusual design ascend to the gallery. These, in place of a central newel post of cylindrical form, have a void; a moulding on the cantilevered edges of the steps ascends in a steep spiral to form the handrail.

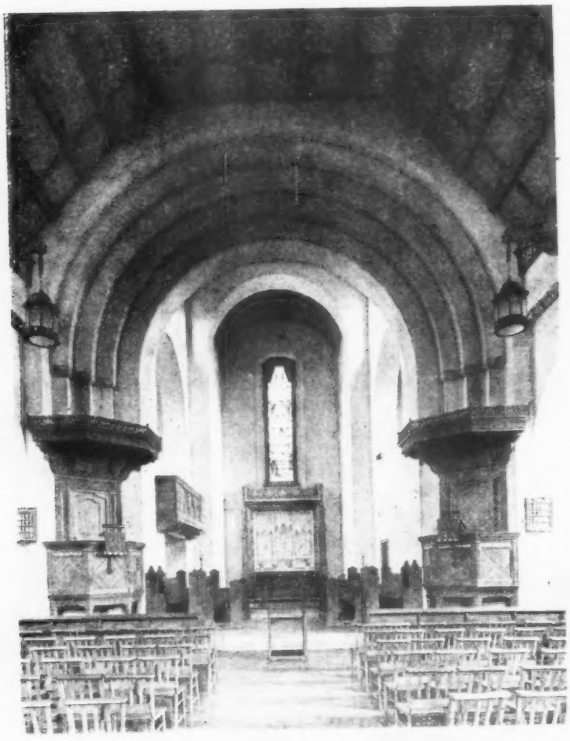
The altar, reredos and font are by Mr. Herbert Read, of Exeter, after Mr. Alban Caröe had collaborated with him in the design. The stained glass windows are by Mr. Hubert Blanchford.

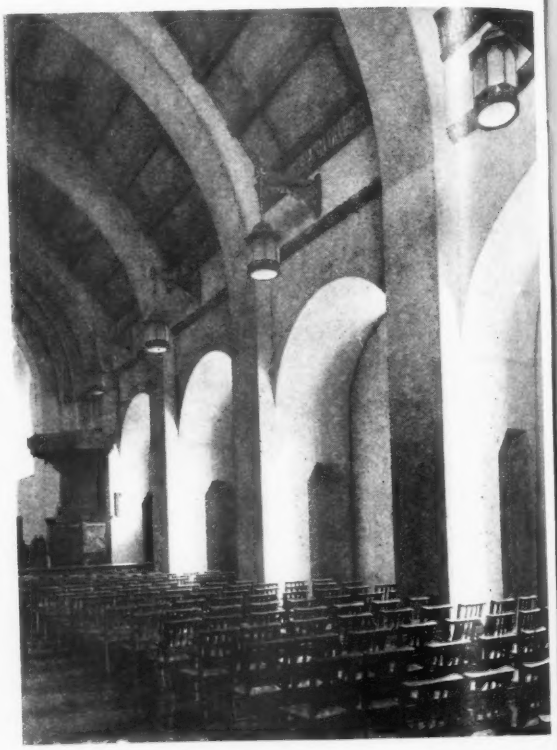
THE HALL.

This has had, as usual, to be designed for several purposes. It has a level floor, accommodating 340 seats, a platform suitable for simple dramatic entertainments,

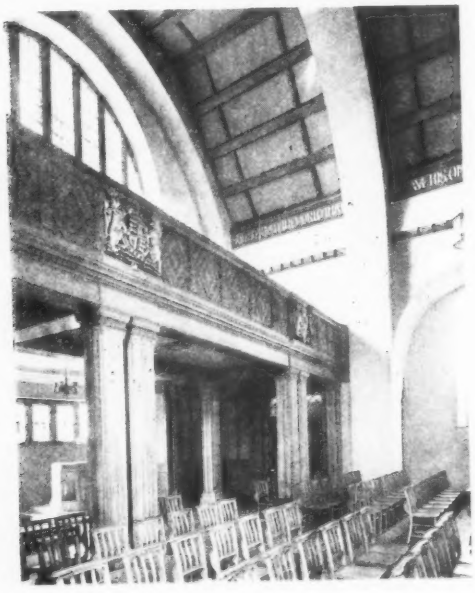


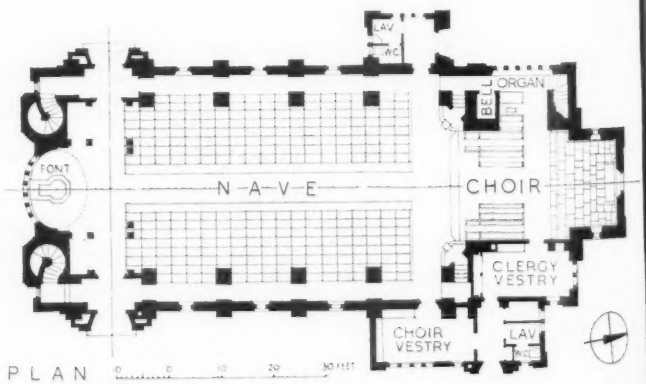
Two views of the church has silver-grey facings and matt blue-grey pantiles



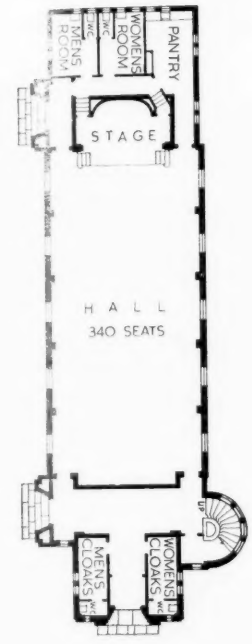


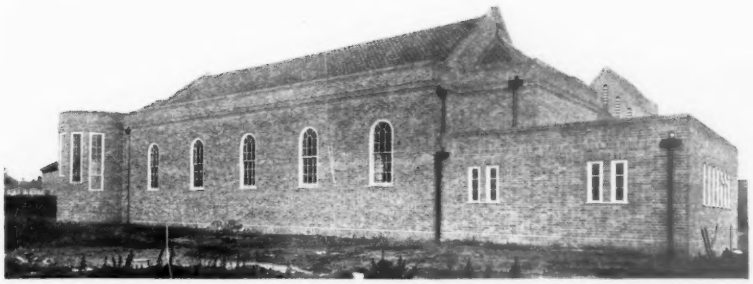
Above, left: The chancel, with a gallery on the left for a women's choir. Right: View of a side aisle showing the successful concealing of natural light sources





Above: Plan of the church. The spiral stairs give access to a gallery over the baptistry both of which are shown in the photograph, left.





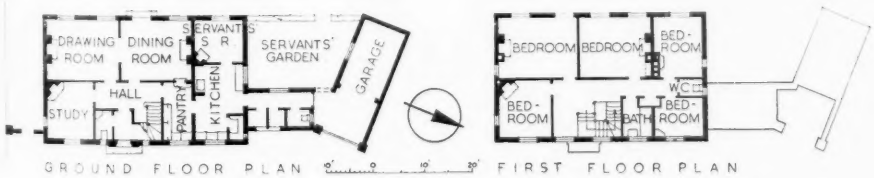
Plan and views of the hall. A smaller hall which can be divided into two classrooms is approached by the stairs

retiring rooms at the platform end, and cloakrooms at the main entrance. On the first floor is a small hall, subdivided by a folding partition into two classrooms. This is reached by a pleasantly designed semi-circular stair.

The structure is of the same facing materials as the church, but the main walls are solid brickwork, and the lesser walls of cavity construction. The hall roof has steel trusses and a ceiling of wallboard. Heating of both the church and hall is by electric tubular heaters and connectors.

THE VICARAGE

This is a simple, inexpensive house of five bedrooms. The ground in front is not fenced off from the church site, the garage and offices being concealed behind a screen wall linking the house to the hall.



Plans of the vicarage

CONTRACTORS AND SUPPLIERS

General contractors: John Thompson & Son, Ltd. Facing bricks: S. E. Collier, Ltd. (Reading) and Williamson Cliff, Ltd. Pantiles: Roberts, Adlard & Co., Ltd. Asphalt: Highways Construction, Ltd. Snowcrete: Cement Marketing Co., Ltd. Woodblocks: Horsley, Smith & Co. (London), Ltd. Choir paving: The Croft Granite Brick & Concrete Co., Ltd. Casements and leadlights: C. E. Welstead. Wrot-iron hinges: E. G. Garton. Door furniture: Yannedis & Co. Electric lighting and heating: A. Dean & Co., Ltd. Sanitary fittings: Shanks & Co., Ltd. Lightning conductor: J. W. Gray & Son, Ltd. Royal Arms, etc.: J. Howard & Sons.

REVIEW OF CONSTRUCTION AND MATERIALS

This series is compiled from all sources contributing technical information of use to architects. These sources are principally the many research bodies, both official and industrial, individual experts and the R.I.B.A. Science Standing Committee. Every effort is made to ensure that the information given shall be as accurate and authoritative as possible. Questions are invited from readers on matters covered by this section; they should be addressed to the Technical Editor. The following are addresses and telephone numbers which are likely to be of use to those members seeking technical information. There are many other bodies dealing with specialised branches of research whose addresses can be obtained from the Technical Editor. We would remind readers that these bodies exist for the service of Architects and the Building Industry and are always pleased to answer enquiries.

The Director, The Building Research Station, Garston, Nr. Watford, Herts. Telegrams: "Research Phone Watford." Office hours, 9.30 to 5.30. Saturdays 9 to 12.30.

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks. Telephone: Princes Risborough 101. Telegrams: "Timberlab Princes Risborough." Office hours, 9.15 to 5.30. Saturdays 9.15 to 12.

The Director, The British Standards Institution, 28 Victoria Street, London, S.W.1. Telephone: Victoria 3127 and 3128. Telegrams: "Standards Sowest London." Office hours, 9.30 to 5. Saturdays 9.30 to 12.30.

The Technical Manager, The Building Centre, Ltd., 158 New Bond Street, London, W.1. Telephone: Regent 2701, 2705. Office hours, 10 to 6. Saturdays 10 to 1.

TENEMENTS

In the Final Report* of the Departmental Committee on the Construction of Flats for the Working Classes we have the results of a thorough investigation, lasting three years, into all aspects of the design and construction of tenements. The Committee was in all respects highly expert and representative. It is understood that the contribution made by the architect-members of the Committee was specially valuable. The profession certainly owes them thanks for a great deal of arduous, voluntary labour. The R.I.B.A. members serving on the Committee were: Mr. H. V. Ashley [*F.*], Mr. G. Topham Forrest [*F.*], Mr. Ian B. Hamilton [*A.*], Mr. L. H. Keay [*F.*], Mr. Francis Lorne [*F.*], Mr. Stanley C. Ramsey [*F.*], Mr. A. Scott [*F.*] and Mr. John Wilson [*F.*]. The Chairman was Sir George Humphreys.

The Committee published an Interim Report in May 1935†, in which they outlined the extent of the problem, reported on their investigations into existing schemes, attempted to measure efficiency, examined costs per room and per flat and discussed in general terms the principal constitutional requirements. The Interim Report also announced a scheme for obtaining comparative costs, using different systems of construction, for a standard block of 60 flats in four floors.

The Final Report is largely concerned with an analysis of eight estimates of cost of the standard block, using different methods of construction. The names of the persons submitting schemes are given in a list separate from that of the schemes; nevertheless it is not difficult to allocate authorship. The Committee say that it has been impossible to establish exact comparisons in cost owing to the fact that the estimates of the different schemes are not all based on the same included and excluded items; also estimates are presented in different ways, some giving full priced quantities, others lump sums for groups of items.

SYSTEMS OF CONSTRUCTION

The twelve systems are arranged in ascending order of cost though it is pointed out that this is based on the figures supplied and that, therefore, the order must not be regarded as in any way endorsed by the Committee. What may be regarded as the "norm," namely, 13½-in. brickwork in cement mortar, comes third in the list. The two cheaper ones are: (A) Precast concrete hollow blocks with reinforced concrete columns and beams formed where required in the hollows of the blocks; (B) Reinforced concrete columns and beams and 4-in. reinforced concrete outer walls, 2-in. plaster blocks as permanent shuttering forming the internal lining. The Report does not fail however to point out some risks in these systems which must be guarded against, such as crazing, cracking and the maintenance of appearance. It is interesting to note that under (B) the 2-in. gypsum blocks are commended as having been "found satisfactory in various buildings and the heat insulation of the walls should be excellent."

Immediately above the solid wall construction comes steel frame with 9-in. wall rendered. It becomes obvious from the analysis that steel frame is only economical in tenement buildings of more than five storeys. Next above is a scheme for using hollow clay blocks on steel framework, rendered externally. This is followed by rendered expanded metal on steel framework with an inner lining of plaster blocks.

After that comes the Mopin system and on this there is a good deal of comment. The study of the Mopin system reveals one weakness of the Committee's analysis. It has never been claimed for the system that it is economical except on very large schemes. A temporary factory has to be built on the site; clearly, the larger the scheme, the lower will be the proportionate overhead cost per flat of the factory.

It is fairly certain that a 60 flat scheme is too small to derive appreciable benefit from its mass-production methods. The Report stresses the necessity for adequate supervision of manufacture, involving routine testing to ensure that the slender concrete units are dense enough to provide adequate cover for the steel reinforcement. Weather resistance and heat insulation of the walls are stated as being satisfactory, but the floor construction comes in for some severe criticism. First, as to fire resistance, it is said: "The bottom flanges of the steel joists are only protected by a single thickness of fibreboard and it is open to question whether these floors would comply with the Grade D* fire resistance requirement."

* *Construction of Flats for the Working Classes.* Final Report of the Departmental Committee of the Ministry of Health. H.M. Stationery Office. 1s. 0d.

† Reviewed in R.I.B.A. JOURNAL 13 July 1935, pp. 998-1000.

* One hour under test conditions laid down in B. S. Specification No. 476.

Also, the Report says: "As proposed, the ceilings would provide the maximum of harbourage for vermin."

Other systems consist of various methods of infilling steel or reinforced concrete frames. One of these has reinforced concrete walls faced externally with precast concrete tiles and internally with cork slabs, plastered and distempered. The chief novelty of the system lies in a special method of climbing shuttering and in the use of the facing materials instead of wrought shuttering.

SOUND INSULATION

Since the publication of the Interim Report a great deal of valuable research information on this subject has become available. Much of it will be found elsewhere in this JOURNAL given in Mr. Morreau's Paper on "The Prevention of Noise in Buildings." The Committee were, however, supplied with a Report prepared by the National Physical Laboratory and the Building Research Station and entitled "Noise in Working-Class Flats." This is published in its entirety as an Appendix. This Appendix and Mr. Morreau's paper represent practically the only reliable scientific information of use to architects on this subject at present available. It is understood, however, that a B.R.S. Bulletin is to be issued shortly.

The Committee lay down that the insulation of party walls or partitions between flats should be at least equal to that of an 8½-in. brick wall. They say, however, that a cavity partition of two 2-in. clinker slabs, insulated at the margins with cork (see Mr. Morreau's paper), will give approximately the same resistance and will cost only about one-third more than a 4½-in. brick wall.

Floors also, say the Committee, ought to have a degree of insulation equivalent to that of an 8½-in. wall. This will be obtained where there is adequate insulation against impact noises—which is indeed the crux of the problem in regard to floors. It has become apparent that the best means of achieving this is by some type of "floating floor" construction. This involves in principle a structural (and presumably fire-resisting) floor which supports, through resilient isolators, an upper subsidiary floor of considerable weight.

A highly ingenious floor of this type, evolved at the Building Research Station, is described and illustrated in the Appendix. On the main floor is laid a layer of building paper. Then, at about 2-ft. centres, special pipe sockets 2 ins. deep are placed upright on the paper; these have internal threads and external bands. Concrete is then poured over the paper to a depth equal to that of the sockets; this concrete is reinforced with mesh. When the concrete has set, rubber pads are dropped into the sockets, followed by threaded plugs. Screwing down the plugs, each a limited amount at a time, gradually raises the floating floor until it is resting only on the rubber pads.

The tops of the sockets can be made to give a level surface by means of threaded washers. These can be removed and the rubber pads renewed one at a time when they have deteriorated. It is important that the edge of the floating floor be isolated from the surrounding walls or impact noise may reach the structural floor and walls below.

Generally, on the matter of noise reduction, two general principles are stated, namely, that the first line of defence is adequate planning and that noise should be prevented or cut off at its source as much as possible.

EQUIPMENT

The following are some principal points:—

"We consider that for working-class dwellings it would be better to adopt the more common type of range or of water boiler in a kitchen which can be used as a living-room than to sacrifice efficiency in an attempt to give a sitting-room free of these things."

"Electricity at ½d. per unit corresponds in gross heat value to 14.6d. per therm, so that, taking all losses into consideration, gas at 10d. per therm will be the less expensive medium for general boiling purposes."

"It can be said that any difference in cost between (hot) water from a central source and that from the household boiler would be due mainly to difference in the price of fuel."

"That central heating in working-class flats cannot generally be justified on the grounds of cost."

"Central hot water service can be justified where the layout of an estate is such that 100 flats or more can be supplied with hot water from one boiler room, provided that a suitable rationing system is adopted."

"In a block of flats of six storeys a lift becomes almost a necessity. It may be taken that a lift for a five-storey or six-storey block will cost about £800 for the engineering portion of the work."

STRUCTURAL STEEL: REDUCTION IN JOIST SIZES

The British Constructional Steelwork Association announce that there is to be a temporary reduction in the number of sizes of joists available to customers. We have been asked to publish the new list for the guidance of members in specifying. Structural steelwork firms have already agreed to restrict the range of sizes of joists used in designs for which they are responsible to the reduced list. In order to enable work already in hand to be completed, the steelmakers will accept specifications for joists included in the present list up to 14 December 1937.

The reduced list of British Standard Sizes is as follows:

24″ × 7½″	95 lb.	per ft.	N.B.S.	10″ × 6″	40 lb.	per ft.	N.B.S.
22″ × 7″	75 lb.	,,	,,	10″ × 5″	30 lb.	,,	O.B.S.
20″ × 7½″	89 lb.	,,	O.B.S.	10″ × 4½″	25 lb.	,,	N.B.S.
20″ × 6½″	65 lb.	,,	N.B.S.	9″ × 7″	50 lb.	,,	,,
18″ × 8″	80 lb.	,,	,,	9″ × 4″	21 lb.	,,	,,
18″ × 7″	75 lb.	,,	O.B.S.	8″ × 6″	35 lb.	,,	,,
18″ × 6″	55 lb.	,,	N.B.S.	8″ × 5″	28 lb.	,,	O.B.S.
16″ × 8″	75 lb.	,,	,,	8″ × 4″	18 lb.	,,	N.B.S.
16″ × 6″	62 lb.	,,	O.B.S.	7″ × 4″	16 lb.	,,	O.B.S.
16″ × 6″	50 lb.	,,	N.B.S.	6″ × 4½″	20 lb.	,,	,,
15″ × 6″	45 lb.	,,	,,	6″ × 3″	12 lb.	,,	N.B.S.
14″ × 6″	57 lb.	,,	O.B.S.	5″ × 4½″	18 lb.	,,	O.B.S.
14″ × 5½″	40 lb.	,,	N.B.S.	5″ × 3″	11 lb.	,,	,,
13″ × 5″	35 lb.	,,	,,	4¾″ × 1¾″ × 6½	lb.	,,	,,
12″ × 5″	32 lb.	,,	O.B.S.	4″ × 3″	10 lb.	,,	N.B.S.
12″ × 6″	44 lb.	,,	,,	4″ × 1¾″ ×	5 lb.	,,	,,
10″ × 8″	70 lb.	,,	,,	3″ × 3″ × 8½	lb.	,,	O.B.S.
10″ × 8″	55 lb.	,,	N.B.S.	3″ × 1½″ ×	4 lb.	,,	N.B.S.

Fenny Stratford Church

THE GOTHIC REVIVAL IN THE EARLY 18th CENTURY

By Professor A. E. RICHARDSON [F.]

It is curious that the name of Browne Willis as a pioneer of the Gothic revival should have escaped notice. Yet there is no denying the importance of his literary contributions, nor his influence in the design of Fenny Stratford Church.

The first volume of Willis's *Survey of Cathedrals* appeared in 1727 and the second three years later. The gap in the line of antiquarians who set out to encourage renewed interest in mediaeval architecture is, therefore, bridged. In fact, architecturally speaking, there is a more direct connection between the traceried windows of the church at Fenny Stratford and Isaac Wares Gothicised elevations at Chicksands Priory than is commonly supposed. Browne Willis, 1682-1760, first and foremost was an antiquary, secondly a lawyer, thirdly a Member of Parliament for Buckingham, fourthly a benefactor of the Bodleian Library, and lastly the fox-chasing squire of Whaddon Hall in the county of Bucks.

The title page of the first volume of the *Survey of Cathedrals* has the following note: "and illustrated with 20 curious Draughts of the Ichnographies and Uprights of every Cathedral, newly taken to rectify the erroneous Representations of them in the Monasticon and other Authors."

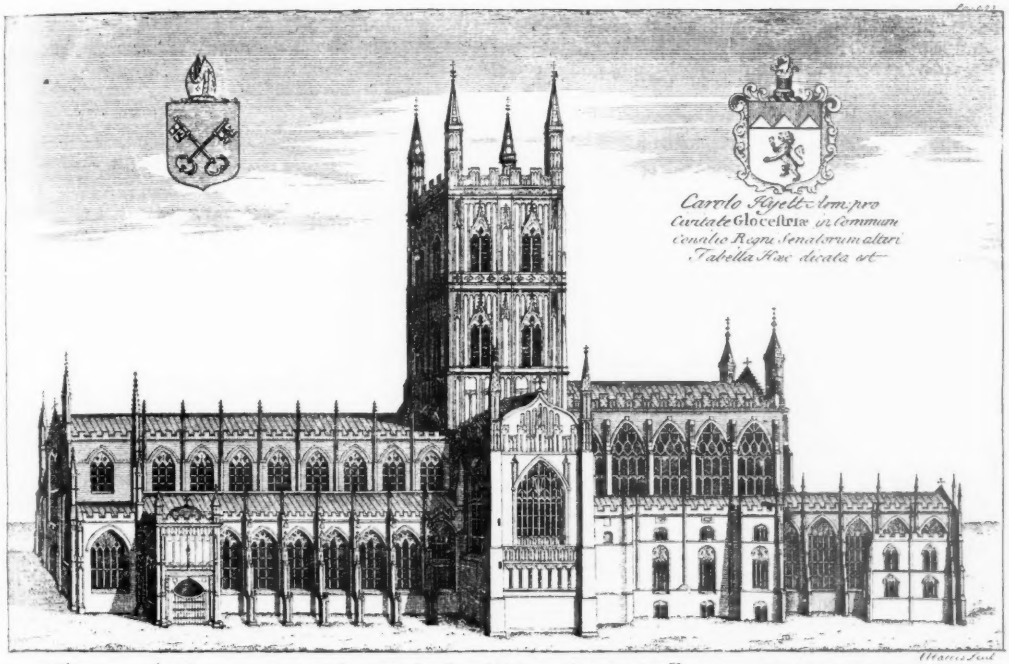
That he was under no illusion in his enterprise is evidenced in the dedication to Alexander Denton, of which the following are excerpts.

"I am not insensible under what Disadvantages the study of Antiquities labours, in the general Esteem of the World; and that this Undertaking, in particular, must not only encounter those common Prejudices, but also stand the test of some Men's Passions, as well as the Reason of others; and that it will be urged against me, that I ought not to have brought Things and Persons so long forgotten on the Stage again; .... there being no Sort of Learning but what has its Enemies, it being natural also more particularly for those who have no Relish for Antiquities, to reflect on the *Revival* of every thing beyond their own Time."

In a later preface following a dedicatory epistle "To His Most Singular good Friends The Society of English Antiquaries" Browne Willis writes—"For I can most solemnly aver, that all my Labours have been calculated with no other view whatsoever, except the improving, recommending and *reviving* the Study of Venerable Antiquity."

From the foregoing will be gleaned the fact that Browne Willis intended to direct the attention of the public to the diversity of Gothic architecture as exemplified in the plans and elevations of the principal Cathedrals. His specific mention of the term *Revival* is significant of his ulterior purpose.

In the production of the "Draughts" he was assisted at first by Burghers, who for fifty years was employed as engraver to the University of Oxford. But he expresses



The South Prospect of the Cathedral Church of St. Peter at Gloucester.

his dissatisfaction with the finish of some of the work. When he engaged the "more able workman," Mr. Harris, of London, he still finds fault, mentioning the "Pinnacle-work in Gloucester Tavern, not sufficiently expressive of the Beauty and Tenderness of the Original; and the last being not put in good Perspective; however as there are plans to explain all, the Architecture will be sufficiently understood."

The inquisitive reader will search these two volumes for analytical descriptions of Gothic architecture in vain. But this does not imply that Browne Willis was unaware of the forceful beauty of Gothic structure. His main object was to present the plans and elevations of cathedrals in as telling a manner as possible. The convenient divisioning of Gothic into periods had not been invented. The padding of the two volumes, therefore, with data relating to ecclesiastical appropriations and lists of dignitaries is in strict accord with prevalent methods. But of the author's main purpose there can be no doubt.

Many years ago chance brought a sight of a painting by Wootton showing Browne Willis following the hounds at Aspley Guise. Enquiry at Fenny Stratford and Bletchley revealed the influence he brought to bear on local buildings and fitments. Quite recently the purchase of the two rare volumes describing the cathedrals suggested the filling of the gap in Gothic antiquarian research which Herr Haferkorn thought existed.

That Browne Willis was a moving spirit in the early Gothic revival is clear from the valuable manuscripts which he bequeathed to the Bodleian Library. The strange thing is that no architectural critic has thought fit to mention his literary contributions as part of the sequence from the republication of the *Monasticon*. Eastlake confused him with James Bentham as the joint author of *A History of Gothic and Saxon Architecture in England*, which appeared in 1798. But at this date Browne Willis had been dead for over thirty-eight years; the reference therefore is misleading.

Students of the early Gothic revival will do noble service by measuring what is left of the 1726 church at Fenny Stratford, particularly the painted ceiling and some of the stained glass. But they are advised to keep clear of the addition made in the middle of the 19th century.

Correspondence

OFFICIAL ARCHITECTURE AND PRIVATE ARCHITECTS

Newport, Mon.
27.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—The new President, and I purposely use the term instead of Mr. Goodhart-Rendel, was elected by the Council and they, in turn, by all members of the Institute. In other words, the President is our representative as members, and as such the public have the right to expect the opinions and policy expressed in his inaugural address to be those of the Council and Institute. In fact, Mr. Goodhart-Rendel stated he had brought forward one of the *Institute*'s primary concerns. Further, the *Institute*, in Mr. Goodhart-Rendel's view—in his own words—" if possible must avert the dangers of architecture too exclusively departmental."

Later, the President states the inaugural address should be rather a programme than a survey, therefore, if he has his way, the Institute's programme will include a policy to curtail the duties and work of the official architect, but suggests the official will be allowed to impart his special knowledge and experience to private architects to enable them to produce designs for Government and public buildings. This is a very admirable suggestion from the point of view of one section of the Institute, but is it a policy in the interests of the R.I.B.A. or of architecture as a whole, or the public? I say definitely it is not and Mr. Goodhart-Rendel has a task before him if he has to prove to the public that they would be better served by the employment of private architects and that better architecture in the full sense would be produced.

Fortunately, at the commencement of his year Mr. Goodhart-Rendel has shown his hand, so that official architects know what to expect during his term of office, and will no doubt take action to correct the " inappropriateness " of his inaugural address.

Mr. Goodhart-Rendel said, in his personal views, nothing can be said in defence of the present practice of engaging official architects except it saves public authorities trouble, etc. I beg to inform Mr. Goodhart-Rendel, after over 40 years of public experience, he is quite wrong, due probably to his lack of service in the interests of the public, as evidenced by his address, but, on the other hand, I can assure him the representatives of the public of local authorities expend much thought and time in order to obtain the best results in the interests of the public and even architecture, but not in the interests of individual members of our profession.

Now that the President has declared his policy in regard to official architects the question arises as to what action will be taken by the Official Architects' Committee and whether they will still function.

As a member of the R.I.B.A. for 35 years I deeply resent Mr. Goodhart-Rendel's inaccurate, unjust and biased remarks and it is hoped, in the interests of the Institute, the Council will take immediate action to prevent a very serious cleavage in the membership of the Institute.

As a member who claims to have assisted the R.I.B.A. by long service in the interests of the Institute and to the best of my ability, I consider the inaugural address by the President to be against the principles of professional etiquette, and one waits to see what action the Council will take—none, I expect!

CHAS. F. WARD [*F.*],
Borough Architect, Newport, Mon.

109 Oakleigh Park Drive,
Leigh-on-Sea, Essex
12.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—The President of the Institute, in his recent inaugural address, devoted a large proportion of his time to attacking the system whereby the architectural work of Government Departments and Local Authorities is carried out by salaried architects and their staffs.

As your readers are doubtless familiar with the terms of the address, I will refrain from quoting any part of it verbatim.

At the outset of his remarks on the subject the President admitted that the term " official architecture " was no longer one of reproach, and that much good work had been done recently by official architects. Though I fear it was not his intention, these statements should help to dispel the idea current in some quarters that the official architect is *ipso facto* a bad architect, and that the private architect is necessarily a good one. In fact, if he had gone a little further in candour he would have admitted that much bad work had been done both recently and in the past by private architects.

It follows from this that failing a competition, which in any case does not always result in the selection of the " superlatively suitable man " to design a given building, there is at least as good a chance of obtaining a satisfactory design from within a department as from outside.

But apart from the subject of design, the President goes on to question whether the system is not in fact more costly than the employment of private practitioners. As a matter of fact, however, it is well known, and should have been well known to the President, that an architectural department can be run much more cheaply than the cost of putting all the work out. At the same time the assistants are paid better salaries than they would obtain with a private architect, since the private architect (being human) will tend to keep down his salary account as low as possible.

In my opinion the unique position of the assistant in the profession of architecture has so far not been adequately recognised by the Institute. In no other profession is there such a large proportion of qualified assistants, to whom private and official architects alike are bound to delegate much of their designing. Most of these assistants, despite what the President says to the contrary, have no hope of practising independently, and for that very reason are concerned mainly with securing as high a salary as possible. The standard of their work will not be affected by the fact that they are employed in a public office or otherwise. Indeed, this standard is likely to be higher in the former case because there is generally more time for the consideration of problems in a public office than a private architect can afford to give.

The R.I.B.A. has recently circularised the chiefs of architectural departments with a view to ascertaining the numbers of its members who are employed in public offices. Is it too much to hope that when the information is obtained, the Institute will at last begin to realise that it would be better employed in furthering the interests of so large a proportion of its members than in attacking them publicly?

In conclusion I would draw attention to the fact that there is a growing feeling in the minds of many architects that the Institute is run, not for the ordinary member, but for a

privileged few, a feeling which speeches of the nature of the President's do nothing to dispel. Moreover, it is questionable how long these members, and especially those employed in public offices, will think it worth while to continue to support a body which takes their subscriptions, and in return, instead of helping them, goes out of its way in the person of its President to undermine their status.

The opinions which I have expressed are endorsed by the ten other members of the architectural staff of the Corporation of Southend-on-Sea, who are members of the Institute.

I am, Sir,
Yours faithfully,
WALTER F. BALL [*A.*]

New Scotland Yard,
London, S.W.1
24.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—Whilst sharing our President's desire to uplift the art of building, may I question his tactics in creating and/or widening a breach between two sections of the profession?

At 50 years of age, with not inconsiderable experience in "both camps," including a present intimate and, to me, happy official relationship with many of my "outside" professional colleagues, I have learned that good architecture is not peculiar to either free lance or official positions, but is due, so I believe, to the spirit and vision of "the man at the top."

The private practitioner may be more trammelled by a monetary outlook than any official by his committee and seniors, whom he may, and does, so often inspire. "Quinneys" reminds us that "people are more important than things," even building-things, and there seems little doubt that in this difficult and changing world an official position is now generally preferred by very many of the younger generation.

I am not anxious that the spirit of adventure may be stifled, for opportunity is never lacking to those who really desire it. Let us therefore seek unity, for in that way lies our hope for advancement in all things, including the Art of Architecture.

F. T. BUSH [*A.*]
Deputy Police Architect and Surveyor,
New Scotland Yard, S.W.1

"Hillside House."
79 Caerau Road,
Newport, Mon.
1.12.37

To the Editor, JOURNAL R.I.B.A.

DEAR SIR,—An inaugural speech by the President of any responsible professional organisation is a speech of great political and general import. It behoves, therefore, the President of such body to curb his tongue when tempted to give expression to personal criticism which is directed at a particular section of such organisation. That in a nutshell is the nature of Mr. Goodhart-Rendel's indiscretion.

My sympathy is extended to him in his illness and I am sure all members of the R.I.B.A. wish him a speedy recovery. This fact makes it more difficult to criticise, savouring, as it does, of hitting a man when he is down, but loyalty to the R.I.B.A. and my fellow official architects demands that derogatory statements directed against the professional ability of architects holding official appointments as compared with their brethren in private practice must be withdrawn and withdrawn without equivocation.

Believe it or not! as "Ripley" would say, official architects are one of the mainstays of the R.I.B.A., a loyal, tolerant, long-suffering lot, who have been snubbed and treated abominably in the past. That they are now showing their displeasure in terms quite unmistakable savours of the "writing on the wall."

It is evident from Mr. Fletcher's letter that the Executive Committee are alarmed by this righteous indignation, and it is to be hoped that drastic action will be taken at the meeting of this, and the Official Architects' Committee, to resolve the contretemps to the mutual advantage of both sections, otherwise cleavage is not far distant.

Contrary to Mr. Fletcher's belief, most official architects are quite well aware that they now have a Committee of their own and are pleased with its construction. Unfortunately, this Committee is not an Executive Committee; consequently its recommendations are not likely to carry much weight with the Council, membership of which is confined in the main to architects in private practice. Official architects should note this for future elections, when efforts should be made to adjust the balance of power on the Council.

Furthermore, I commend the attention of the President and Council of the R.I.B.A. to the manner in which the B.M.A. upholds and furthers the interests, influence and status of those of its members who happen to be medical officers holding full time official appointments with the Government or local authorities. Let it be noted that authorities which refuse to conform to the B.M.A. scale of salaries *cannot* obtain medical officers. As to status, it would be unthinkable for a Medical Officer of Health or any of his assistants to work under the control of, say, a dental surgeon.

By inverse ratio we find numbers of official architects working on the staffs of engineers, surveyors or land agents, who direct the architectural policy and take credit for such work.

No doubt the Official Architects' Committee are alive to this condition, and I hope they will work unceasingly to end what can only be described as an intolerable situation.

Yours faithfully,
JOHNSON BLACKETT [*A.*]

Manchester House,
Bath Street,
Southport
26.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—The letter published in the last issue of the JOURNAL from Mr. G. Noel Hill, the City Architect of Manchester, relative to the above has my wholehearted support.

I have viewed with interest a large proportion of so-called official architecture carried out in this country within recent years. What I saw did not in any way reflect the "slot machine" architecture—a term used by your President in his inaugural address in reference to buildings designed by "official" architects.

To my surprise the larger percentage of the work was characterised by something far different from mechanised standardisation and expressed a virility and freshness which was pleasing to behold.

The work I am acquainted with, which Mr. Noel Hill has carried out for the municipality of Manchester, is characterised by originality and a freshness of outlook and with still one more quality, the observance of tradition.

The City Architect's recently completed new police building has none of the "inappropriateness and staleness" of official architecture. It is rather a fine example of classic design, redolent of civic dignity, well composed, virile in conception and admirably "appropriate" to its purpose. In brief, it is a living contribution to the new architecture of Manchester.

The same characteristics apply to Mr. Hill's domestic work, whether under the classification of flats or houses. In vast municipal undertakings a certain amount of repetition is essential, which helps to give coherency and uniformity, but the danger of over-emphasis in this respect is always overcome in Mr. Hill's designs by his clever manipulation of motifs and massing, which gives that charm and varied interplay of light and shade always to be found in this so-called "official" architecture.

Yours faithfully,

GORDON HEMM [*A.*]

THE PLANNING OF SCHOOLS

Springfield,
Maidstone
19.11.37

To the Editor, JOURNAL R.I.B.A.

DEAR SIR,—Referring to the report of Mr. Burchett's talk on the Planning of Schools in the JOURNAL for 8 November, it is noted that no mention has been made of the information given following Mr. Burchett's answer to the question regarding towel drying in schools. I think the information given then will be of interest to all those dealing with school planning.

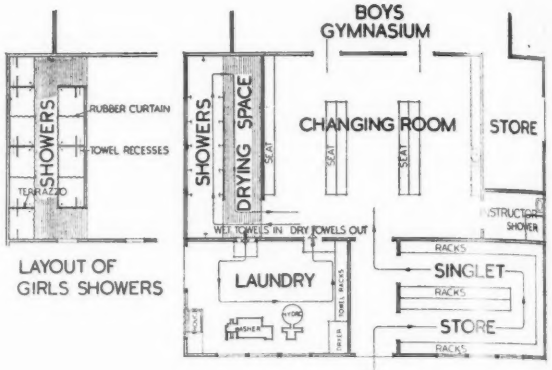
The accompanying plan shows the method of towel drying adopted in Kent schools, and the following description outlines the general working of the scheme.

With the publication of the new regulations of the Board of Education on the planning, construction, and equipment of gymnasia, this problem was given very careful consideration by the Kent Education Committee.

It was thought at first that a system of collection with the washing being done at the large Poor Law Institution Laundries would solve the problem. This was not adopted, and a small school laundry has been evolved for each school (or pair of schools, if adjacent). This laundry is placed next to the gymnasium ante-room. The accompanying plan indicates its position and relationship with other rooms nearby.

In a typical Central School some 480 children are accommodated, and assuming the gymnasium to be in use for six periods per day and five days per week, it is estimated that towels are used 1,050 times per week; thus to provide a clean towel for each pupil is a very difficult problem.

The simple form of laundry decided upon consists of a washing machine, hydro-extractor, drying cabinet, and racks for storing clean towels. The working of this laundry is as follows:—



The room being placed in close proximity to the changing Room and showers facilitates the collection of clean towels and the disposal of dirty ones, hatchways being provided for this purpose. Used towels are thrown through the hatchway immediately after use into a container and thence pass into the washing machine, after which surplus water is removed by the hydro-extractor. After removal from this machine, the towels are sufficiently dry to go into a heated cabinet for the final stage of drying. From here they are folded up and placed in convenient storage racks ready for re-use.

With regard to the problem of infection, the towels are disinfected in the process of being washed in the washing machine, as the temperature is raised to over 140° F.

From the plan it will be seen how the apparatus is placed to give sequence of working. It is possible to deal with approximately 250 towels per day with this apparatus, but it is calculated that only 210 towels per day will pass through the laundry; thus the total number of towels for the school mentioned need be no more than 500, including general wear and tear replacements, a number greatly below the one arrived at if towels were sent to an outside laundry. The singlets can be dealt with in a similar manner.

A large sink or trough is provided for use as necessity arises for hand washing any articles. The laundry will also be used for washing linen, etc., from the school and canteen.

It should be borne in mind that the scheme is still in an experimental stage, and may possibly require a number of revisions, but it does present a genuine attempt to deal with this new problem of towel drying in schools.

Evidence of this scheme has been given before the Board of Education by my Department and the Education Authority concerned, and the Board have given it approval.

I am, dear Sir,
Yours faithfully,
W. H. ROBINSON,
County Architect

THE QUANTITY SURVEYOR'S CONTRIBUTION TO BUILDING WORK

12 Great George Street
19.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—Mr. John M. Theobald, in his opening address as President of the Chartered Surveyors' Institution last session, referred to the fact that when a new building is described in the Press, even the technical Press, the name of the quantity surveor is seldom if ever mentioned, though it is quite usual to see the names of the contractors and sub-contractors given in full.

By tradition and custom the quantity surveyor shuns publicity. Nevertheless, the Quantity Surveyors' Committee of the Institution shares Mr. Theobald's view that there is no reason, on professional or other grounds, why the name of the quantity surveyor should not be included in the descriptions or reports of new buildings when they appear in the papers; and they feel that the quantity surveyor, as the "technical accountant" upon whom the 1931 Form of Contract places certain important responsibilities, is not unworthy of his place in such announcements.

My Committee are informed by the editors of the technical papers that while they are quite prepared to publish the name of the quantity surveyor if it is supplied to them, they are in that respect largely in the hands of the architect. It is hardly fair, perhaps, to expect the editorial staff of a technical paper to ask the architect for the name of the quantity surveyor if it is not given, and I can well imagine that the busy architect might be impatient of such requests.

May I, therefore, beg the hospitality of your columns to ask members of the Royal Institute, when sending in reports and descriptions of new buildings to the papers, to remember their quantity surveyors? I suggest that the name of the quantity surveyor should appear immediately after the name of the architect, unless a consulting engineer is also retained, in which case the quantity surveyor's name should follow the consulting engineer's.

With the happy relationships which exist between architects and quantity surveyors, both individually and corporately, I am sure that my appeal will not be in vain.

I am, Sir,

Your obedient servant,

E. C. HARRIS.

Chairman, Quantity Surveyors' Committee

STANDARDS OF ADEQUACY AS TO NATURAL LIGHT IN HABITABLE BUILDINGS

9 Gray's Inn Square,
London, W.C.1
1.12.37

To the Editor, JOURNAL R.I.B.A.

DEAR SIR,—The contributions of Mr. Trystan Edwards are always interesting, generally entertaining, and often very useful. This is true of his lengthy criticism in the current issue of the JOURNAL of what he alleges to be the rigid regulations laid down in the Memorandum on the administration of a portion, very vital to architects, of the Town and Country Planning Act, which Memorandum was prepared by the Joint Committee on Health and Comfort in Housing convened by the British section of the Health Organisation of the League of Nations and sent to the Minister of Health and was published by the Council in the JOURNAL of 16 October.

His pungent criticisms would, however, in this case probably have been more valuable to the Minister if before drafting them he had read the Memorandum more carefully and had appreciated that it lays down no regulations at all.

From first to last it is nothing more than an attempt to provide practical machinery for rendering completely flexible the precise wording necessarily used in legal enactments, examples of which it instances without in any way laying them down.

Every town planning authority is free to ask the Minister and Parliament to approve schemes embodying such regulations and restrictions as it deems to be most suitable for the different parts of the district which the Act authorises it to control. The sole object of the Memorandum is to suggest that such restrictions shall be expressed in a form which would secure for architectural design the maximum of latitude consistent with defined criteria of amenity.

Yours faithfully,

PERCY J. WALDRAM [*L.*]

LAND SETTLEMENT ASSOCIATION FINANCE

Kungsgatan 6, Stockholm
27.11.37

To the Editor, JOURNAL R.I.B.A.

SIR,—I have read with interest the article regarding the housing work of the Land Settlement Association in your issue of 22 November, and intend to let our readers know something about these English holdings. I should, however, be very glad if you could inform me regarding one point. In your article there is nothing said about the economical side. I understand that the Association pays all building costs, etc., but must the occupiers pay any amount themselves when they start? Have they to pay anything yearly for interest and amortisation so that the holdings will be their own in the future? Or do they only rent the holdings? Perhaps the Association has some printed information regarding these questions, which you will be kind enough to send me.

I beg you to excuse me all the trouble which I cause you with these questions, but as the economical organisation is very interesting and important it would be valuable to present the whole programme for our readers.

I remain, Sir,

Yours respectfully,

W. OJARSON,

Editor of "Hem i Sverige."

***Mr. A. G. S. Fidler**, architect of the Land Settlement Association, has furnished the following reply to supplement information given in various pamphlets which he sent to Mr. Ojarson, and which can be obtained from the Land Settlement Association:—*

The Land Settlement Association pays all costs of development, including houses, glasshouses, piggeries, etc. The money is obtained from a special fund placed by the Government at the disposal of the Commissioner for the Special Areas.

Full-time Holdings.—The men are all receiving unemployment allowance, and have nearly all been unemployed for long periods. They pay rent to the Land Settlement Association, and after fifteen months (which may be looked upon as their training period) their unemployment assistance terminates, the settler becomes independent, and is expected to earn his livelihood from the produce of his holding.

Cottage Homesteads.—Cottage Homesteads schemes are created beside prosperous towns, and elderly unemployed men and their families are transferred there from the Special Areas. It is hoped that their adolescent children will find work in the new district.

The settler in a Cottage Homestead pays rent to the Association, but, while unemployed, receives unemployment assistance (subject to the Means Test, by which the amount of unemployment assistance received varies according to the amount of earnings coming in to the home), the amount of money obtained from the sale of produce on his holding being intended to supplement the family income.

THE CHURCH OF THE NATIVITY, BETHLEHEM*

The results of the excavations at the Church of the Nativity carried out in 1934-5 have been published in the *Quarterly* of the Palestine Department of Antiquities by its director, Mr. E. T. Richmond, in Vol. V, No. 3.

In a note on the Church of the Nativity in Vol. VI, No. 2, of the *Quarterly* of the Department of Antiquities in Palestine, Mr. Richmond has gone a step farther than he has hitherto done† and has provided two excellent essays at reconstruction of the original Constantinian plan and of that of the present church, when first rebuilt by Justinian.

For the main lines of the plan in both cases the evidence is unquestionable, and where it has been necessary to extend this evidence Mr. Richmond has done so with a happy combination of imagination and restraint.

In his restoration of the entrance to the grotto of Constantine, Mr. Richmond shows N.E. and S.E. stairs only; such stairs still exist from Justinian's restoration, but lack of room in the smaller Constantinian church would almost debar their use. It seems more likely that a great western stair was used in Constantine's church, since there is hardly room to land at any other point and it would form a central feature at the end of the nave.

It seems almost certain that the high altar was actually at the bottom of the "well," in front of the grotto of the nativity, while the congregation would surround the grille surmounting the open well-head; they could be allowed to circulate from the north aisle of the nave round the well and out by the south aisle (there can be little doubt that the left-handed reverse direction, or "widdershins," would be avoided). Such an arrangement demands a single western entrance to the holy place, for the use of the officiating heirarchy only; admission of the public to the site may have been a later development.

We are handicapped in the reconstruction of such a sanctuary by the fragmentary state of the knowledge of early church liturgy, which in any case was probably of a different character at these principal holy places from that used in ordinary churches. It is to be hoped that the plan of the Bethlehem sanctuary now published may provide further enlightenment to the liturgical scholar, with ultimate advantage to the study of the architectural design.

The reconstruction of the atrium is, in principle, only less certain than that of the church, but archæological evidence seems rather to indicate that the stylobates carrying the eastern and western colonnades were cut through to permit of direct access to the doors of the aisles as well as to the great central doors.

It is with respect to the colonnades of the atrium that we must, reluctantly, differ from the reconstruction: it has been assumed on the authority of H. Vincent and F. M. Abel ("Bethléem" 1914) that there can be no possible doubt as to the Constantinian date of the columns of the present church, with their caps and bases; these comprise forty-six columns, the caps for ten square responds, and four great double columns at the angles of the crossing; these last consisting of two half-rounds attached at right angles to a square pier. The columns are of classical appearance and minute examination of all the caps shows that the series must have been carved as a whole for some one building. "Bethléem," in suggesting that the Constantinian basilica had no transept, a theory now proved to be correct, was forced to suppose an atrium with an order of the same height as the colonnades of the

*The Church of the Nativity. The plan of the Constantinian church, and the alterations carried out by Justinian, by E. T. Richmond (in *Quarterly* of the Department of Antiquities in Palestine, Vol. VI, No. 2. 1936. Oxford University Press. 5s.)

†*Quarterly*. Vol. V. No. 3.

church at whose angles the four double columns stood; at the re-use of the columns by Justinian's architect, these must have been transferred to the crossing.

To this theory there are the following objections:—

(1) It would be very unusual for the order employed in the atrium to be of the same scale as that in the church.

(2) There is no sign of weathering on the double caps.

(3) This reconstruction of the church only provides places for eight of the ten respond caps.

(4) The only portion of the atrium stylobate yet found and reasonably assumed to be the position of a column is narrower than the base which would have been placed on it.

(5) The single column, with its base, and angle pier with cap, which still remain *in situ* from the later atrium of Justinian, seem to be of exactly the same work as the columns and caps of the church, though to a somewhat smaller scale.

(6) Constantine's church was apparently sacked and burnt in the Samaritan revolt—it is improbable that many columns should survive the fire, or at any rate show no traces of it.

This series of difficulties, though each perhaps of slight weight when taken singly, amount altogether to a formidable indictment of the theory of a Constantinian origin of the columns of the present church, and suggest that they are not, in fact, earlier than the period of Justinian's rebuilding.

Once the preconceived idea of a fourth-century origin has been overcome, it is possible to support the negative line of reasoning with some more positive evidence drawn from the "order" considered stylistically.

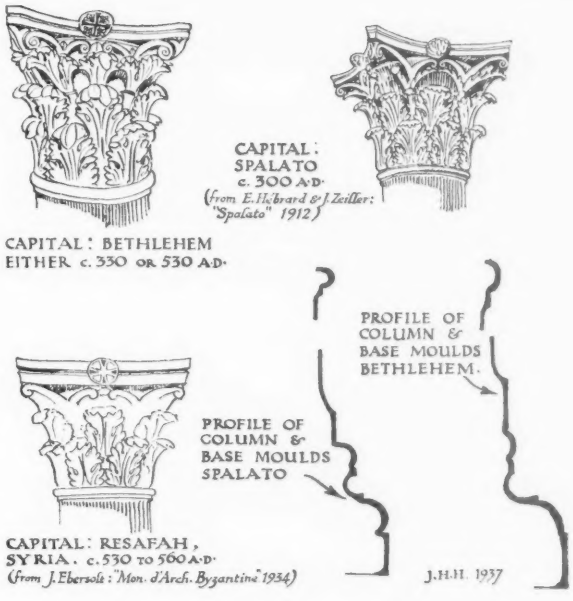
(1) A close comparison in style was instituted by Vincent and Abel in "Bethléem" with the columns of Diocletian's palace at Spalato of about A.D. 300.

Personal examination of the work of Spalato does not bear out a close equation in point of time. A large number of strictly classical details at Spalato are absent at Bethlehem; note especially the form of the angles of the abaci, and the supporting leaflet which crowns the volutes at Bethlehem; the lack of deep undercutting which at Spalato is very noticeable; not least, the presence at Bethlehem of the disk with a cross, which was considered long ago an indication of a date later than the fourth century.

(2) The bases tell the same tale as the caps; their mouldings are flattened, and the bottom torus merges into the square base in a fashion quite slovenly when compared to the work at Spalato; the abnormal depth of the bottom fillet of the shaft also suggests a post-classical date.

Still more definite is the comparison between the Bethlehem work and that at Rasafah in Syria, where the walls and gates are known to have been built by Justinian; beside a gate is a cap very like those at Bethlehem, with the disk and cross. Mr. Richmond's suggestion of an octagonal cone of timber covering the sanctuary may be confirmed by the identification, recently suggested by Mr. J. W. Crowfoot, of the right-hand group of buildings in the apse mosaic at Sta. Pudenziana, Rome, with the early buildings at Bethlehem.

The very small representation of Bethlehem on the Madaba mosaic map also shows a building with nave and sanctuary in the dual form, and one dark tessera in the centre of the "roof" of the latter doubtless marks the opening at the top of the conical roof. The reconstruction of Justinian's alterations is hardly less interesting, showing as it does a later arrangement of the raised paving above the grotto, enclosed by a


CAPITAL: SPALATO
c. 300 A.D.
(from E. Hébrard & J. Zeiller: "Spalato" 1912)
CAPITAL: BETHLEHEM
EITHER c. 330 OR 530 A.D.
PROFILE OF COLUMN & BASE MOULDS BETHLEHEM.
PROFILE OF COLUMN & BASE MOULDS SPALATO
CAPITAL: RESAFAH, SYRIA. c. 530 TO 560 A.D.
(From J. Ebersolt: "Mon. d'Arch. Byzantine" 1934)
J.H.H. 1937

screen with a semi-circular eastern termination. Above a base moulding of the same red limestone as the columns, the screen would probably be of bronze, and one may add to the suggested reconstruction the fact that the two bronze single leaves, now used as doors to the grotto, would have formed an entrance of suitable size for this screen. The rosetted crosses of these pierced bronze doors are of similar type to those in relief on the well-head, now used as a font, and the small incised ones on the abaci of the capitals. Another question of unusual importance from the liturgical point of view is that of the original position of the well-head above referred to, which almost certainly occupied the place suggested by Mr. Richmond, above the opening of a large cistern and surrounded by a channel for carrying off surplus water; this channel is roughly plastered and must have been covered by a grille, probably of pierced marble, sunk slightly below the general floor level. Such an arrangement suggests that it was used for baptismal purposes and is interesting as being within the church itself and not contained in a separate building. Mr. Richmond suggests that this cistern may be "the well from which David drank"; surely the well of Bethlehem was famous from the fact that David *did not* drink of it? (see I Chronicles 11. 17, 18).

Both articles are written in a clear and incisive style and are accompanied by a series of well-drawn plans and unusually excellent photographs. Taken with the plans and photographs published in Vol. V, No. 3, of the Q.D.A.P., these form an excellent critical apparatus for the student unable to visit the building itself, and a record of the excavations now refilled.

WILLIAM HARVEY
JOHN H. HARVEY

Book Reviews

CONSTRUCTIVE ART*

Circle is the confession of faith of leaders in the abstract art movement in Europe and America. The book consists of many excellent photographs of constructions, sculptures and paintings and twenty-two essays by artists and critics, personal manifestos expounding various aspects of the constructivist or abstract idea.

It is not surprising that architects in general are responsive to abstract art. The basic arguments of the abstract art idea have always been the bases of architectural æsthetics. Buildings gain their æsthetic validity for the same reasons that give validity as works of art to any of the works illustrated in *Circle*. Buiidings are not representational, and they are not obviously charged with a didactic emotional content as is the other great non-representational art—music. Whatever art there is in good building must be a single positive statement in abstract form of the validity of the building itself, a validity that will only be obscured by the interpolation of decorative elements. "Architecture is an event in itself," says Le Corbusier in his chapter in *Circle, The Quarrel with Realism*. The direct æsthetic appeal of such architecture as the Tavanasa and Valtsdriel bridges by Maillart, of Aalto's chairs or any good modern or ancient building is exactly the same appeal as is made by non-functional objects, sculptures and constructions, many of which are employing the same means to excite emotional response, namely, the positive effects of forms in stress, of space relationships of planes and penetrations. Abstract art "does not separate Content from Form—on the contrary it does not see as possible their separated and independent existence." It cannot conceive the "art" of a building being imposed on its functional existence as columns can be imposed on any building "to make it beautiful." All this is so essential to any understanding of modern architecture that anyone who has the glimmering of enthusiasm for modern architecture must, it would seem, respond as keenly to abstract sculptures and constructions and paintings, which tell the same story with their reality heightened by their detachment from use.

The creations of abstract artists being detached from the ephemeral reality of use or science, being in fact abstract, "have no need of philosophical argument" to back them up; on the contrary "they dictate systems to philosophy," which perhaps is rather an arrogant way of saying that the intuitive power of artists can jump beyond the earthly realities of the scientist or nature. This has always been true of art, but only abstract art fully liberates this the supreme ability of artists. Time and time again this is made evident by the photographs of works shown in *Circle*. The keen *intelligence* of the significant shapes carved by Hepworth or Moore, the self-contained reality with which such things as Gabo's constructions are charged, need neither the apologies of critics or the endorsement of philosophies to give them right to be.

The editors of *Circle* have made no attempt—or no obvious attempt—to make their many essayists toe any philosophical line, the points of view are diverse and the quality of the essays uneven. Gabo's introduction is good—a bit assertive, but so are all these authors; Herbert Read gives the psychological background and Le Corbusier, in a chapter which gains in effect from a personal element of direct serious enthusiasm, proclaims the inevitability of contemporary art and architecture. This chapter has none of the nervous electric quality usually associated with Le Corbusier but is among the most valuable things he has written. The architectural chapters by J. M. Richards, Maxwell Fry, Marcel Breuer, R. T. Neutra, Sartoris, J. L. Martin and Dr. Giedion are mostly more direct, in that they discuss the application rather than the essence of architecture.

Whatever these authors may say, the point of the book is well attained if it succeeds in making these works of art known. Abstract may not be the only form of artistic expression valid to-day, there is and will continue to be room for others, but it is a side of modern art more highly charged with significance than any other. Some of the works are very difficult to understand and no one, not even the most responsive person, will find that he can indolently slip into a comfortable state of tolerance. Such works as these, like all good works of art, are, as Nicholas Gabo puts it, "contagious," active and assertive.

The book is excellently produced (but white cloth for the cover, however pretty, is not really good on a book such as this which will receive continual handling). The pictures are not direct illustrations to the text but are supplementary to it; about 70 separate works are shown, excluding buildings and furniture, by a very representative group of artists, including all the more famous sculptors and painters in the movement. Among the appendices is a useful bibliography.

**Circle: An International Survey of Constructive Art.* Edited by J. L. Martin, Ben Nicholson & N. Gabo. 4to. viii+292 pp. London: Faber & Faber, 1937. 21s.

ROOFING PRACTICE

SLATING AND TILING. *By J. Millar, P.A.S.I., M.I.Struct.E. London: The English Universities Press. 1937. Price 5s.*

The author of this useful manual has done well in encompassing within some hundred and fifty small pages the chief essentials in slating and tiling for roofs and in so doing to keep a nice balance between the spaces allotted to the various sections. The arrangement is good and the type clear. The textual descriptions are straightforward and are abundantly illustrated by constructional diagrams and by photographs.

The information is brought well up to date, for it includes items such as fibre-board for groundwork; chrome-iron nails for use in polluted atmospheres; the fixing of slates and tiles on concrete roofs; and descriptions of concrete tiles and tiles of asbestos-cement. A good feature is the reference to the specifications of the British Standards Institution, for they embody the considered opinions of manufacturers and users and are reinforced by scientific research.

Where so much is good one hesitates to criticise. Still, there are a few points which seem to invite comment.

The author rightly gives warning of the risk of using foreign slates. He might quite usefully have explained that the chief cause of their poor behaviour in this country is that they are here subjected to conditions such as high atmospheric moisture; airs contaminated by acids; and seaside air, from which in their own localities they are free. As regards construction, two details which might have been more clearly shown by the diagrams are the way in which lead soakers are secured in close-mitred slated valleys and the method of forming a simple slated swept-valley.

In treating of camber in tiles, the basic reason, that is, the prevention of chance of a concave face which might arise from warping of the clay during firing, is not given. Cross-cambering, the author suggests, is done for effect, and adds that it naturally militates against efficiency. This notion, by the way, seems to be running through text-books, for this is not the first time it has occurred recently. The cross-camber, it was always understood, was a device of the old tile-makers to gain certain practical ends; to guard against possible lateral concavity of the back; to admit of ventilation of the under side and so assist a saturated tile to dry out and to aid the tile in casting off water from its back quickly. A cross-camber should not, of course, for obvious reasons be overdone, as is sometimes the case nowadays.

There is a rather startling statement that timbers for tiling require to be 30 per cent. stronger than in the case of a roof covered with slates. Here something seems to have gone wrong; since, of the total stress—including wind pressure—which roof-timbers are usually calculated to withstand, the excess due to the weight of tiles over that of thin slates would not represent more than 7 or 8 per cent.

The advice that in valleys special precautions should be taken to insure watertightness is good; but is not the amount by which their pitch is flatter than that of the main slope nearer 10 degrees than 15?

The old custom of forming a pantile valley with a strip two pantiles wide running up the valley, the tiles being hung on short pieces of batten straddling the valley tacked to layer boards and bedded under their rolls on mortar supported by twin laths, is much more effective than the inverted half-round tile method described, since, among other things, the water shed from the two slopes is discharged into two channels instead of one and the splayed-off tails of the pantiles of the slopes can be firmly bedded on the sides of the valley tiles without the intervention of a layer of plain tiles.

But, after all, none of these are very weighty matters and the book is so full of sound stuff that it can be read with profit by anybody who is interested in the subjects with which it deals.

R. MINTON TAYLOR [*F.*]

DUTCH ARCHITECTURE

HEDENDAAGSCHE ARCHITECTUUR IN NEDERLAND. (Dutch Architecture of To-day.) *Edited under the auspices of B.N.A. by A. Eibink, W. J. Gerretsen and J. P. L. Hendriks, with an Introduction by J. P. Mieras. 4to. 156 pp. Amsterdam: Cosmos. 1937. F5.50.*

When Mieras and Yerbury published their *Dutch Architecture in the Twentieth Century* eleven years ago Dutch architecture was "the thing." During the war Holland was able quietly to reorient her architectural traditions in the terms of the new life. The gradual change relieved Holland from the architectural birth pangs of a Corbusier's delivery; their brave new world could, it seemed, be built on safe century-old brickwork foundations. Cuypers and Berlage had been "modern" in the last century, and were still, Berlage particularly, leaders with a positive gospel, but the range of interesting post-war work was not narrowly confined within scholastic limits, not even such of it as was well within the brickwork tradition. New men (new at least to Englishmen), such as Dudok, Oud, Klerk and others, were producing work which was among the most exciting architectural experiences of any young architect then. As M. Miera said in his 1926 introduction, Holland was then Europe's architectural laboratory. There were few signs, even in the excellent selection of work in the 1926 book, to show the exact course of Dutch work, much less of European work elsewhere. The most significant works are often the least expected. Dudok in 1926 represented the synthesis of traditionalism with modernism; his modern cubical shapes picturesquely grouped satisfied new and old alike, but the compromise was perhaps too complete, the bun a bit too satisfying to make one want much more. Hilversum Town Hall is a glorious apotheosis of compromise.

The 1937 book has enough examples of essentially traditional work to make the first impression of it not so violently contrasted with that of the 1926 book, but it is interesting to note that of the forty-nine men represented in 1926, only ten remain among the forty-seven representatives of 1937, and two of these are dead. The burden has changed hands. Tijen, Brinkman and van der Vlugt, Duiker and Holt among the more modern, are new, and it is these men's work which, if not necessarily most representative of their country, is to-day most significant to architects elsewhere. The *Van Nelle* factory, for instance, and the Bergpolder flats are among the most interesting buildings in Europe, not because they are experimental but because they have a grand self-confidence, they are well built, better built perhaps than similar buildings would have been built anywhere else in Europe, and have in them an element of challenge even more clear than that of the Dudok buildings which were exciting us in 1926.

M. Mieras's selection is catholic, but it is a fair cross-section that will perhaps help to draw renewed attention to Dutch architecture, our estimation of which has perhaps somewhat drooped after the concentration of our interest in Holland ten years ago. Every building is shown by exceptionally good photographs, and there are plans as well.

Review of Periodicals

Attempt is made in this review to refer to the more important articles in all the journals received by the Library. None of the journals mentioned are in the Loan Library, but the Librarian will be pleased to give information about price and where each journal can be obtained. Members can have photostat copies of particular articles made at their own cost on application to the Librarian.

Reprints of these reviews, printed on slips suitable for cutting up and mounting on cards, can be had from the Library. A subscription of 5s. covers a year's issues.

All the journals received in the Library (about 200) are indexed, reference being made to all important articles and illustrations so that subscribers can have a constantly expanding index to practically every type of building illustrated in the architectural journals of the world.

Members wishing to have reprints of all previous issues can do so on payment of 3d. per issue to the Librarian Editor.

It is hoped to print them on gummed paper as soon as a large enough number of members subscribe.

SCHOOLS

ARCHITECT'S JOURNAL. *1937. 18 and 24 November. PP. 795 and 827.*

Nursery-Infant Schools.

ARCHITECTURAL RECORD (NEW YORK). *1937. November. P. 30.*

School for the crippled, Los Angeles, by W. F. Ruck.

UNIVERSITIES, ETC.

L'ARCHITECTURE D'AUJOURD'HUI (PARIS). *1937. November. P. 11.*

University of Aarhus, Denmark.

ARCHITECT'S JOURNAL. *1937. 25 November. P. 817.*

Medical School, Aberdeen University, by Pite, Son & Fairweather.

ARCHITECTURE ILLUSTRATED. *1937. November. P. 134.*

The new Royal Veterinary College, Camden Town, by H. P. G. Maule [*F.*].

ZOO

ARCHITECTURAL RECORD (NEW YORK). *1937. November. P. 29.*

Reptile house, Cincinnati Zoo, by Fechheimer & Ihorst.

LIBRARIES

L'ARCHITECTURE D'AUJOURD'HUI (PARIS). *November. P. 74.*

The Viipuri Library, by Alvar Aalto.

LA CONSTRUCTION MODERNE (PARIS). *1937. 14 November.*

Extensions to the National Library, by J.-L. Pascal and A. Recoura.

THE LIBRARY ASSOCIATION RECORD. *1937. November. P. 587.*

Mirror reflectors for lending library lighting.

INSTITUTION

L'ARCHITECTURE D'AUJOURD'HUI (PARIS). *1937. November. P. 25.*

The Danish Engineers' building, by O. Gundlach-Petersen.

HOTELS AND RESTAURANTS

ARCHITECT'S JOURNAL. *1937. 25 November. P. 814.*

Queen's Hotel, Leeds, by W. Curtis Green, Son & Lloyd. The building is fully air-conditioned.

ARCHITECTURE ILLUSTRATED. *1937. November.*

The *Royal Oak Inn*, Hockley Heath, by F. W. B. Yorke [*F.*]; *The New River Arms*, Turnford, Herts, by Elliot, Archer and Marsh [*FF.*]; *The Crown*, Garston, by J. C. F. James [*F.*]; and *The Giraffe*, Kennington, by A. M. Blomfield [*F.*].

ARCHITECTURAL RECORD (NEW YORK). *1937. November. P. 26.*

ARCHITECTURAL FORUM (NEW YORK). *1937. November. P. 385.*

International Casino, New York City, by Lamb, Weiss and Deskey. Large restaurant with stage and dance floor, cocktail rooms, bars, etc.

ARCHITECTURAL FORUM (NEW YORK). *1937. November. P. 429.*

Planning technique of hotel and restaurant bars.

OFFICES

ARCHITECTURAL FORUM (NEW YORK). *1937. November. P. 411.*

Offices. A series of good interiors to small office suites.

ARCHITECTURAL FORUM (NEW YORK). *1937. November. P. 425.*

Showroom and office. Interesting use of photo-murals and mirrors. A. Faidy.

ARCHITECTURAL RECORD (NEW YORK). *1937. November. P. 73.*

Three articles on the planning of newspaper buildings.

MARKETS

L'Architecture D'Aujourd'hui (Paris). *1937. November. P. 16.*

Slaughter houses, packing houses, and the Central Market, Copenhagen.

SHOPS AND SHOWROOMS

Architect's Journal. *1937. 18 November. P. 782.*

Fabric Showroom and Garage, Broadway, Worcs, by G. A. Jellicoe & Partners.

Architect's Journal. *1937. 25 November. P. 843.*

Showrooms and Offices for makers of fireplaces, sanitary fittings, hardware, etc. Architect, H. W. Hobbiss.

INDUSTRIAL

Architectural Forum (New York). *1937. November. P. 391.*

Offices and factory for the Linden division of General Motors, by A. Kahn, are compared with those for Edwards & Co., Norwalk, Conn., by L. Caproni. The two schemes, very similar in fundamental requirements and layout, constitute a "debate in three dimensions" between the modernist and extreme traditionalist viewpoints.

L'Architecture D'Aujourd'hui (Paris). *November. P. 32.*

Food factories for the Swedish Co-operative Society.

Distillery at Jaamaki, Finland.

TRANSPORT

Design and Construction. *1937. November. Supplement.*

Air and Road Transport; including article by G. Dawbarn [*F.*] on principles of planning civil aerodrome buildings.

Architect and Building News. *1937. 26 November. P. 252.*

Terminal building at Le Bourget Airport, by G. Labro.

HOSPITALS

Design and Construction. *1937. November. P. 493.*

Manchester Royal Eye Hospital. New out-patients' department and nurses' and maids' home. T. Worthington and Sons [*F.*].

Architecture Illustrated. *1937. November. P. 130.*

Riddell House, Nurses' Home, St. Thomas' Hospital, by Sir Edwin Cooper, R.A.

Design and Construction. *1937. November. P. 496.*

Maternity unit, Southampton Borough Hospital. S. G. Stanton.

L'Architecture D'Aujourd'hui (Paris). *November. P. 76.*

Sanitorium at Paimio, by Alvar Aato.

SPORTS BUILDINGS

Journal of the Institution of Civil Engineers. *1937. November. P. 77.*

Modern Swimming Pool Design, by Edwin Lomax.

L'Architecture D'Aujourd'hui (Paris). *November. P. 63.*

Fêtes Palace, Helsingfors, a large amusement centre.

THEATRE

Kentiku Sekai (Tokyo). *1937. September. P. 9.*

Kokusai Theatre, Tokyo, by I. Narimatu.

RELIGIOUS

Architect's Journal. *1937. 18 November. P. 777.*

Christian Science Church, Belfast, by Clough Williams and Ellis.

DOMESTIC

Architect's Journal. *1937. 18 November. P. 784.*

House near Kingston, by Maxwell Fry [*A.*].

Architectural Record (New York). *1937. November. P. 67.*

Housing methods in Great Britain. Article by J. W. Laing.

L'Architecture D'Aujourd'hui (Paris). *1937. November.*

Collective housing in the four Scandinavian countries.

EQUIPMENT

R.I.B.A. Journal. *1937. October. P. 1044.*

Standards of adequacy as to the access of daylight to habitable buildings and article by P. J. Waldram [*L.*] on Modern methods of measuring and predetermining daylight.

Architectural Record (New York). *1937. November. P. 108.*

A study of residential service facilities. Kitchen, pantry, cellar, laundry, trunk store, garage, servants' rooms, dressing-rooms, etc.

Heating and Ventilating Engineer. *1937. November. P. 231.*

Hot water circulation, application of elementary principles.

Heating and Ventilating Engineer. *1937. November. P. 223.*

Atmospheric polution with special reference to the National Gallery, by F. I. G. Rawlins.

HISTORICAL

R.I.B.A. Journal. *1937. 11 September. P. 1004.*

The decline of the Mason Architect in England, by D. Knoop and G. P. Jones.

R.I.B.A. Journal. *1937. September and October. PP. 981 and 1029.*

Victorian Architecture, Early and Late. Two articles by Henry-Russell Hitchcock.

GENERAL

L'Architecture D'Aujourd'hui (Paris). *1937. November.*

The issue is divided into four sections devoted to recent architecture in Denmark, Sweden, Norway and Finland respectively. Illustrations of each country's pavilion at the Paris Exhibition are given.

Accessions to the Library

1937-1938—II

Lists of all books, pamphlets, drawings and photographs presented to, or purchased by, the Library are published periodically. It is suggested that members who wish to be in close touch with the development of the Library should make a point of retaining these sts for reference.

Any notes which appear in the lists are published without prejudice to a further and more detailed criticism.

Books presented by publisher for review marked R.

Books purchased marked P.

**Books of which there is at least one copy in the Loan Library.*

ARCHITECTURE

REUNION INTERNATIONALE D'ARCHITECTES
Quatrième Réunion *etc.* Paris . . . 1937. Compte rendu. pfo. 13″. Paris : Réunion, *etc.*, Comité Central d'Organisation. [1937.] R.

BIBLIOGRAPHY

R.I.B.A.
[Library.] Catalogue of the R— I— of B— A— Library. [Complete. 1834—Sept. 1936.] [E. J. Carter, ed.]
Volume i : Author catalogue of books and manuscripts.
11″ × 8½″. Lond. 1937. (£1 1s. to members, etc. ; £2 2s. to others.)

HISTORY

MAXWELL (*Sir* JOHN STIRLING)
Shrines and homes of Scotland.
8¾″. xx + 264 pp. + 119 pls. (backed). Lond. : Maclehose. 1937. 10s. 6d. R.

ROYAL COMMISSION ON HISTORICAL MONUMENTS, ENGLAND
An Inventory of the historical monuments in Middlesex.
10½″ × 8¼″. xxxv + 176 pp. + 184 pls. (backed). Lond. : H.M.S.O. 1937. £1 5s. R.

BOND VAN NEDERLANDSCHE ARCHITEKTEN
Hedenaagsche architectuur in Nederland. . . . Dutch architecture of today. A. Eibink, W. J. Gerretsen, and J. P. L Hendriks, eds. (*In four languages.*)
11″. 155 pp. incl. pls. Amsterdam : Kosmos. 1937. (F. 5.50.) R. & P.

FLORIDA ARCHITECTURE AND ALLIED ARTS, *Corporation*
Florida architecture and allied arts. [1937 issue.]
12″. Miami. [1937.]
Presented by the Florida South Chapter of the American Institute of Architects.

VOCATION, PROFESSIONAL PRACTICE

TURNER (PHILIP J.)
Your child's development. No. 2—In architecture. (*From* Knitting and Homecrafts, *journal*, Oct.)
extract. 11½″. [1937.]
Presented by the Author [F.].

MANCHESTER : MANCHESTER ARCHITECTS' AND BUILDERS' CONSULTATIVE BOARD
Reports, *etc.* :
No. 7. Specification of plumbing and glazing.
8″ × 6½″. Manchester. 1936. R.

DAVIES (T. R. DINGAD)
* "The Standard form of building sub-contract," being an annotation of the new form . . . (issued in 1936 under the sanction of the National Federation of Building Trades Employers and the N— F— of Specialists and Sub-Contractors, *etc.*)
13″. Lond. : Fed. Employers' Press. [1936.] R.
To Loan Library.

PLANNING

KNOOP (D.) *and* JONES (G. P.)
Latlaying the groundwork [marking out the site]. (*From* Misc. Latamorum.)
leaflet. 1937. *Presented by the Authors.*

BUILDING TYPES
(CIVIL)

WESTWOOD (BRYAN *and* NORMAN)
*Smaller retail shops. (The Planning of modern buildings No. 2.)
12½″. 120 pp. Lond. : Archl. Press. 1937. 10s. 6d. R. & P. (2).

STEDMAN (J. S.)
The Layout and design of departmental store fittings in relation to their uses. (Thesis for Final Examination, July.)
2 vols. typescript, *Ink and Coloured D.* 12¾″. 1936.

PRACTITIONER, *journal*
Extra number. [Description of building, 5 Bentinck Street.]
[1937.] 1s. *Presented by Mr. Michael Fletcher.*

MINISTRY OF AGRICULTURE
*Economic series No. 40. Abattoir design. Report of Technical Committee.
pam. 9¾″. Lond. 1934. 1s.
P. *for Loan Library.*

SMALLMAN (A. B.)
*Cancer. Memorandum on . . . radio-therapeutic departments *etc.*
1937. R. *To Loan Library.*

WHEELER (A. W.)
The Whitgift Hospital . . ., Croydon. Guide for visitors.
pam. 8½″. Croydon. [1926.] 6d. P.

BRITISH STANDARDS INSTITUTION
British standard specifications :—
No. 153—parts 3, 4 & 5 . . . for girder bridges. Parts 3, 4 & 5. *Etc.*
Revised ed. 1937. 2s. R.

(RELIGIOUS)

[MORFEY (W. M.)]
St. Matthew's Church, Ipswich. A short history and guide.
pam. 7¼″. Ipswich. [1930.] 6d. *Presented.*

(EDUCATIONAL)

BRATISLAVA : TOWN MUSEUM
Muzeum mesta Bratislavy. . . . Le musée de la ville *etc.* (Museum civitatis Bratislavensis. *cover title.*) (*In Czech, German and French.*)
12″. (vi) pp. + lx pls. [Bratislava. 1930 or after.]
Presented by the City of Bratislava through Dr. B. Babánek.

ABERYSTWYTH: NATIONAL LIBRARY OF WALES
The National Library of Wales. 15 July, 1911. 15 July, 1937 [opening ceremony]. [Description of building.]
9¾″. 19 pp. + pls. [Aberystwyth. 1937.] R.

(DOMESTIC)

MINISTRY OF HEALTH
Housing and town and country planning. Extracts from the Annual Report . . . for 1936-37.
1937. 1s. R.

D.S.I.R.: BUILDING RESEARCH STATION LIBRARY
Health and comfort in housing. Lists Nos. 18-21. (Bibliography No. 39-[18-21.])
1937. R.

LIVERPOOL, *City*
*City of L.—housing. 1937.
10¼″. L'pool. [1937.]
Presented (2) by Mr. L. H. Keay [F.].

CENTRAL HOUSING ADVISORY COMMITTEE—RURAL HOUSING SUB-COMMITTEE
*Rural housing. Second report *etc.*
pam. 9¾″. Lond.: H.M.S.O. 1937. 9d. R(2).

BRITISH STEELWORK ASSOCIATION
A Demonstration block of flats built at . . . King's Cross.
10¾″. 30 pp. Lond. [1937.] R.

BRITISH COMMERCIAL GAS ASSOCIATION
How to heat your greenhouse. (A Thousand and one uses, *etc.*, No. 283.)
pam. 11″. Lond. 1937. 6d. R.

DETAILS, FITTINGS

MOLL (LEONHARD)
Stahlbetonmasten [reinforced concrete pylons], *cover title.*
11¾″. 24 + var. pp. + xxiv pls. Munich. 1937.
Presented by the Ostetovy Odbor Hlavního Města, Prague, through Dr. B. Babánek.

ALLIED ARTS

ROYAL SOCIETY OF ARTS
Arrangements for the session 1937-38. With some particulars of the Society's history and work.
8¾″. Lond. [1937.] R.

LORING (J. N.)
The Anatomy of English chair types. A scientific classification of 18th century domestic styles. (*From* The Antique Collector.)
10¾″. 22 pp. Lond. [1937.] R.

BUILDING SCIENCE

STRADLING (R. E.)
Physics in the building industry. The scientific worker in a traditional industry. (Physics in industry: Lecture No. 20. Institute of Physics.)
pam. 9¾″. Lond. [1933.] R.

MATERIALS

CUPRINOL *Ltd.*: TECHNICAL DEPARTMENT
The Enemies of timber.
[Reprint.] 8½″. Lond. [1937.] 1s. R.

D.S.I.R.: BUILDING RESEARCH
Special reports:
*No. 20. Economic and manufacturing aspects of the building brick industries.
9¾″. Lond.: H.M.S.O. 1933. 2s. R (2).

BRITISH STANDARDS INSTITUTION
British standard specifications:
No. 284/288 . . . for black (carbon) pigments for paints. *Etc.*
Revised ed. 1937. 3s. 6d. R.

Nos. 306, 309 . . . for black and purple oxides of iron for paints. *Etc.*
Revised ed. 1937. 2s. R.

Nos. 312/313, 319, 337 . . . for earth colours for paints. *Etc.*
Revised ed. 1937. 3s. 6d. R.

ARCHBUTT (S. L.) *and* PRYTHERCH (W. E.)
Effect of impurities in copper. (British Non-Ferrous Metals Research Association, Research Monograph No. 4.)
9¾″. xvi + 134 pp. + pls. + foldg. tables.
Lond. 1937. 12s. 6d. R.

CONSTRUCTION

BRITISH STANDARDS INSTITUTION
British standard specifications:
No. 473 . . . for concrete plain roofing tiles.
1932. 2s. R.

No. 550 . . . for concrete interlocking roof tiles.
1934. 2s. R.

D.S.I.R.: BUILDING RESEARCH
Bulletins:
No. 12. The durability of slates for roofing. C. M. Watkins.
pam. 9¾″. Lond.: H.M.S.O. 1934. R.

BRITISH STANDARDS INSTITUTION
British standard specifications:
No. 540 . . . salt-glazed glass (vitreous) enamelled fireclay pipes. *Etc.*
Revised ed. 1937. 2s. R.

ROSE (WALTER)
The Village carpenter.
8½″. xxi + 146 pp. + pls. Camb.: U.P. 1937. 8s. 6d. P.

EQUIPMENT

BRITISH STANDARDS INSTITUTION
British standard specifications:
No. 37 . . . for electricity meters.
Revised ed. 1937. 2s. R.

TOPOGRAPHY

SHELL GUIDES *series*
Hampshire.—Towards a dictionary of the County of Southampton, commonly Hampshire *etc.* By John Rayner.
9″×7″. Lond.: Batsford. 1937. 2s. 6d. R.

FAUST (OVIDIUS)
Bratislava. Umelecké *etc.* . . . Artistic and historical monuments. (Bratislava: Town Magistrate.) *(In 5 languages.)*
7″. xlii pp. + pls. (182 pp.) Bratislava. 1930.
Presented by the City of Bratislava through Dr. B. Babánek.

PRAGUE
Praha. (Pref. by Petr Zenki.) *(Introd. text in German. Captions in five languages.)*
8½″. (vii) pp. + var. pls. [? Prague: City. 19—.]
Presented by the Ostetovy Odbor Hlavního Města, Prague, through Dr. B. Babánek.

TOWN AND COUNTRY PLANNING

GIBBON (*Sir* GWILYM)
*Problems of town and country planning. (The Town (and county) hall series. No. 2.)
7¼″. 200 pp. Lond.: Geo. Allen & Unwin. 1937. 5s. R. & P.

GREAT BRITAIN: PARLIAMENT—ACTS
Trunk Roads Act, 1936.
9¾″ Lond.: H.M.S.O. 1936. 9d. P.

OBITUARIES

W. E. RILEY [*F.*]
E. P. WARREN, F.S.A. [*F.*]

We very much regret to record the death of two members of the Institute of very long standing: Mr. William E. Riley and Mr. Edward Prioleau Warren.

Mr. Riley, who was 85, was architect to the London County Council from 1899 to 1919. Mr. Warren's most important work was at Oxford and Cambridge.

Full obituaries will appear in the next number of the JOURNAL.

H. A. DICKMAN [*F.*]

The sudden death of Harry Alderman Dickman, at his home in Gedling, Nottinghamshire, at the comparatively early age of 55, came as a shock to a wide circle of friends and acquaintances.

He received his early architectural training at the Nottingham College of Art and the University College, and was one of a small band of architectural students, most of whom became outstanding personalities in the architectural world, viz., Charles Gascoyne, Robert Atkinson, George Knott and others.

After some years in the office of the late Dymock Pratt at Nottingham, Dickman was for a time in the office of the County Architect at Winchester, chiefly on school work, and it was from that office he left to join the Artists Rifles on the outbreak of war. Although not strong physically, he went into camp at Romford and Gidea Park for some months and was eventually gazetted to the Royal Engineers and served in France and Belgium and awarded the Military Cross for services in the field.

After the war he started practice in Nottingham, and by his powers of design and strong character became a well-known personality in the city, and carried out a large number of residences, office buildings, flats and industrial buildings. He was in some request as an assessor and arbitrator, and was very energetic in his work for the Nottingham, Derby and Lincolnshire Architectural Society. He was President in 1925-27, and was also member of the Council of the Royal Institute of British Architects. For some years he was Secretary of the Civic Society and more recently has been the Secretary of the Advisory Panel of the Nottingham Province established under the Council of the Preservation of Rural England, in which capacity he put in a great amount of work, both in its organisation and its working.

In addition to his professional activities, Dickman had a wide social life, belonged to the Notts Golf Club, the North Shore Golf Club, the Constitutional and Borough Clubs, and was a member of the local branch of the British Legion.

He was a man of high character, always generous and willing to help his professional brethren, a delightful companion, and his passing will be deeply deplored, not only by his widow and relatives, but by an extraordinary number of friends and acquaintances as typified by the huge representative attendance at his funeral at the Gedling Parish Church.

JOHN WOOLLATT [*F.*]

ROLAND HOTZ [*F.*]

We regret to record the death as the result of a motor accident on 7 September 1937 of Mr. Roland Hotz, an architect who was very well known in Simla, where his family had run hotels for the last fifty years.

Mr. Hotz, who was born in Simla in 1885, was articled in London to Messrs. Ransome and Sutcliffe. He practised in Simla from 1910, and became consulting architect to the Government of India. Among the buildings he designed are Christ Church School, Auckland House School, St. Andrew's Scotch Kirk, St. Mark's Union Church, Lady Reading Hospital, Wildflower Hall, Mahasu, the new Station Library and the Dalziel Buildings, all in Simla. Outside Simla, he built the High Court at Nabha, the Hospital and New Courts at Faridkot and hotels at Delhi and Agra.

He was a member of the Indian Institute of Architects and of the Royal Sanitary Institute.

His death is a great loss to a large circle of English and Indian friends by whom he was much loved for his cheerfulness and generosity.

G. C. AWDRY [*Ret. F.*]

We regret to record the death at the age of 79 of Mr. Graham Awdry, a Fellow of the Institute since 1888.

Mr. Awdry was articled to Messrs. Foster & Wood, of Bristol, and later became a partner, the firm being known as Foster, Wood & Awdry. Among the principal works of Mr. Awdry was the Sackville Hotel, Bexhill; St. Peter's Church, Chippenham; St. Barnabas Church, Beanane; Malmesbury Cemetery; he also restored after a fire St. Mary's Church, Bathwick, Bath, and built some of the Bristol University buildings.

Mr. Awdry was diocesan surveyor for the Diocese of Bristol, Past President of the Bristol Society of Architects and Past President of the Royal Wessex Academy of Art. He was also very well known in fencing circles and once won the Hurlingham Cup for épée. There is no successor to the practice.

WALTER POTT, O.B.E. [*Ret. F.*]

We regret to record the death of Mr. Walter Pott, on 24 September 1937.

Mr. Pott, who was born in 1863, was articled to Colonel Easton at Ashton-under-Lyne, and entered the Office of Works as Assistant Surveyor in 1886. For eleven years he was in charge of the Leeds district. In 1905 he was appointed architect, and in 1914 a principal architect, in the Office of Works, retiring in 1920.

Mr. Pott's work was mainly in connection with Post Office buildings in England and Wales, and during the war he was responsible for the erection of a number of temporary buildings in London and the country.

HENRY ROSS [*Ret. A.*]

We regret to record the death on 25 June of Mr. Henry Ross.

Mr. Ross, who was born in 1857, was articled to Mr. Eli Knowles, of Accrington. He started to practise in 1879, and among the buildings he erected are Accrington Grammar School; Church and Cemetery, Clayton-le-Moors; St. Peter's Church and St. Paul's Church, Accrington; extensions to Moorlands Institution, and many shops in the centre of Accrington. Mr. Ross had been a Justice of the Peace for the Borough of Accrington since 1903.

S. C. ARDING [*L.*]

Mr. Seymour Arding, whose death we regret to record on 16 July, was born in 1868, and was articled to Messrs. Roger Smith & Cale. He practised in partnership under the title of Arding, Bond and Buryard, and built a number of council schools. The practice has now been dissolved.

G. V. EVANS [*L.*]

Mr. G. V. Evans, whose death we regret to record on 4 May, was born in 1874 and was articled to Mr. Arthur O. Evans, whose partner he became in 1904, and whom he eventually succeeded.

Mr. Evans built the Judge Williams Memorial Hall, Trealow; the cottage hospital, the Guardians' offices, and St. Matthew's Church, Pontypridd; the Union Infirmary, Llwynypia; and the Girls' Intermediate School, Treforest. For one year during the War he was President of the South Wales Institute of Architects. He is succeeded in practice by Mr. Haydn Burgess.

WILLIAM SWANN [*L.*]

Mr. William Swann, whose death took place on 10 July, was born in 1883, and was articled to Mr. T. H. Allen, of Stockport. He started practice in about 1900, first with Mr. Stanley Bailey and later with Mr. E. J. Scaife. There is no successor to the practice.

Notes

PROFESSOR CORFIATO

Mr. H. O. Corfiato [*F.*], S.A.D.G., who for many years has been Reader in Architecture on the staff of the Bartlett School of Architecture at University College, London, has been appointed Professor of Architectural Design by the Senate of the University.

DANCE CLUB

The remaining three dances organised by the R.I.B.A. Dance Club will be held on the following dates:—Friday, 17 December 1937, Tuesday, 4 February, 1938, Tuesday, 22 April 1938. Tickets 6s. each.

Particulars can be obtained from Mr. R. W. H. Robertson, Clerk to the Dance Club, at the R.I.B.A.

THE MUSIC CLUB

The concert which the Music Club has arranged will take place on 6 December, the day this JOURNAL is published. It will begin at 8.30 and the singer will be Miss Joyce Buckley, soprano, assisted by Miss Mary Armstrong, piano, and Miss Helen Barnett, flute. There is no charge for admission but programmes will be on sale and it is hoped that any members who wish to support the concert will contribute more than the bare minimum.

CONTROL OF UNSIGHTLY BUILDING

THE PANEL SCHEME OPERATED BY THE CENTRAL PANELS COMMITTEE IN CONJUNCTION WITH THE ROYAL INSTITUTE OF BRITISH ARCHITECTS, THE COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND AND THE INSTITUTE OF BUILDERS

A conference of delegates representing the advisory panels was held in the Jarvis Hall, R.I.B.A. Headquarters, Portland Place, on Tuesday, 2 November, under the chairmanship of Sir Percy Hurd, M.P.

Representatives of over forty districts in various parts of the country attended and the following papers were read and discussed:—

1. on "The Constitution and Working of the Panels and their Relation to the Local Authorities," by Mr. Thomas Rayson [*F.*], of Oxford; and
2. on "Practical Considerations in the Improvement of the External Appearance of Buildings," by Professor Patrick Abercrombie, M.A. [*F.*].

After a full discussion, in which thirty-four speakers took part, the following resolution was passed:—

> "That this Conference considers that, in view of the failure in many areas of existing Acts to prevent the destruction of amenities, the Minister of Health should seek powers to accord statutory backing to the advisory panels set up or to be set up under the recognised panel system and to require the local authorities to consult such advisory panels."

The discussion at the conference made it quite clear that in those areas where panels were in full operation the standard of quality in the design of new houses had been markedly raised.

Notes from the Minutes of the Council

1 NOVEMBER 1937

New Library Catalogue

A resolution of thanks was passed in favour of Mr. Sigismund Goetze [*Hon. A.*] for his generous gift towards the cost of the new Library Catalogue.

British Standards Institution

Owing to the resignation of Mr. Alan E. Munby [*F.*], through ill-health, from various committees of the British Standards Institution, the following were appointed in Mr. Munby's place:—

Building Divisional Council: Mr. H. M. Fairweather [*F.*].

Technical Committee B/19, Unit Weights of Building Materials: Mr. Oscar A. Bayne [*A.*] and Mr. W. R. Glen [*L.*].

Technical Committee PW/49, High Alumina Cements: Mr. C. J. Morreau [*A.*] and Mr. Frank H. Heaven [*A.*].

Mr. Percy V. Burnett [*F.*] was appointed to represent the R.I.B.A. on the following Committees:—

Technical Committee SF/6, Areas and Heights of Chimneys;

Technical Committee B/47, Fire Place Openings.

Plumbing Trades National Apprenticeship Council

Mr. R. J. Angel [*F.*] was appointed to represent the R.I.B.A. on the Plumbing Trades National Apprenticeship Council.

Proposed London County Council Codes of Practice

The Science Standing Committee reported that, as a matter of urgency, they had appointed Mr. Walter Goodesmith [*A.*] and Mr. J. Ernest Franck [*F.*] to represent the R.I.B.A. on a joint Committee of the R.I.B.A., the Chartered Surveyors' Institution, the Institution of Civil Engineers and the Institution of Structural Engineers, to consider the proposed Codes of Practice under preparation by the London County Council, the first two of which relate to the use of electric arc welding for structural steelwork and to special steel reinforcement for reinforced concrete.

SCHOOL NOTES

A.A. SCHOOL OF PLANNING AND RESEARCH FOR NATIONAL DEVELOPMENT

First Examination Results

The first examination has been held for the diploma of the Architectural Association School of Planning and Research for National Development and for exemption from the Final Examination for Associate membership of the Town Planning Institute, as set by the Joint Board of Examiners.

Six members submitted themselves for examination, Professor Patrick Abercrombie, M.A., [*F.*], P.P.T.P.I., acting as Visiting Examiner.

The results are as follows: J. Bland, B.Arch.(McGill), [*A.*], Honours Pass; T. Arnold Jeffryes, D.A.(Edin.), [*A.*], Honours Pass; H. J. Spence-Sales, B.A., Honours Pass; K. C. Brown [*A.*], A.A.Dipl., Pass, Distinction in Site Planning; D. L. Blair, B.Arch. (McGill), Pass; M. E. Taylor [*A.*], Pass.

THE WELSH SCHOOL OF ARCHITECTURE

Examination Results

The following awards have been made as a result of the Sessional Examinations at the Welsh School of Architecture at the Technical College, Cardiff.

Professor L. B. Budden, M.A. [*F.*], and Mr. W. B. Edwards, M.A., B.Arch. [*F.*], are the external examiners.

Fifth Examination for the Diploma awarded at the end of the five years' full-time course, exempting from the R.I.B.A. Final Examination and qualifying for Registration under the Architects' Registration Acts:—

Armstrong, D. J., Diploma, with Distinction in Thesis; Jenkins, D. T., Diploma, with Distinction in Thesis; Owen, D. B., Diploma; Thomas, N. P., Diploma, with Distinction in Design and Working Drawings; Wall, L. W. D., Diploma, with Distinction in Thesis and Working Drawings.

Third Examination for the Certificate awarded at the end of the three years' full-time course, exempting from the R.I.B.A. Intermediate Examination:—

Treatt, Miss J. B., Certificate; Armstrong, D. J., Certificate; Gwilliam, D., Certificate; Williams, T. C., Certificate.

Second Examination: Gedrych, I. D.; Jenkins, R. L.; Morgan, Miss M. V.

First Examination: Phillips, W. J.; Richards, L. J.; Seaman, H. W.; Williams, D. C.

Notices

THE THIRD GENERAL MEETING, MONDAY, 20 DECEMBER 1937, AT 8 P.M.

The Third General Meeting of the Session 1937-1938 will be held at 8 p.m., on Monday, 20 December 1937, for the following purposes:—

To read the Minutes of the Second General Meeting, held on Monday, 22 November 1937; formally to admit new members attending for the first time since their election; Mr. Edward J. Carter, B.A.Cantab. [*A.*], R.I.B.A. Librarian and Editor, to read a Paper on "The Case for a Learned Society."

POSTPONEMENT OF INFORMAL GENERAL MEETING, 15 DECEMBER 1937

The Informal General Meeting which was to have been held on Wednesday, 15 December has been postponed and will take place on Wednesday, 19 January 1938 at 6.15 p.m., when the subject for discussion will be "Architecture and the Next Slump", and the speakers will include Mr. R. Coppock, General Secretary of the N.F.B.T.O., Lt. Col. C. W. D. Rowe and Mr. A. W. Barr, Secretary of the A.A.S.T.A.

Full details will be published in a later issue of the JOURNAL.

THE R.I.B.A. LONDON ARCHITECTURE BRONZE MEDAL, 1937

The attention of members is drawn to the Form of Nomination and the conditions, subject to which the award will be made, for a building built within a radius of eight miles from Charing Cross during the three years ending 31 December 1937, issued separately with the last number of the JOURNAL. Any member of the Royal Institute is at liberty to nominate any building for consideration by the Jury.

Nominations should be sent to the Secretary R.I.B.A. not later than 28 February 1938.

R.I.B.A. ANNUAL DINNER 1938

The Annual Dinner will take place on Friday, 11 February 1938, at 7 for 7.30 p.m., in the R.I.B.A. Henry Florence Hall, 66 Portland Place, W.1. Full particulars are contained in the circular letter to members enclosed with this issue of the JOURNAL.

BRITISH ARCHITECTS' CONFERENCE BRISTOL, 22-25 JUNE 1938

The Annual Conference next year of the Royal Institute of British Architects and of its Allied and Associated Societies will take place at Bristol from 22 to 25 June 1938.

The Wessex Society of Architects have in hand the preparation of a most attractive programme and particulars will be issued in due course.

PROFESSIONAL ADVERTISING

The attention of the Practice Standing Committee has been drawn to the fact that the publishers of certain journals are approaching architects for details of their professional activities, which the publishers propose to embody in the editorial columns of their journals. In the case of one particular firm of publishers, several members forwarded to the Institute the proposed article as drafted by the editor and sent to the architects for any additions or amendments the architects desire. In each case the wording of the articles is identical, with the exception of the names and addresses of the firms of architects to whom they were sent.

The Committee desire to warn members generally against this undesirable form of publicity. The acceptance by members of invitations of this nature from firms of publishers is, in the opinion of the Committee, directly contrary to the Code of Professional Practice and tantamount to advertising.

THE RECEPTION OF NEW MEMBERS AT GENERAL MEETINGS

It has been decided by the Council to modify the procedure for the introduction and reception of new members at General Meetings. In future new members will be asked to notify the Secretary beforehand of the date of the General Meeting at which they desire to be introduced and a printed postcard will be sent to each newly elected member for this purpose. They will be asked to take their seats on arrival in a special row of seats reserved and marked for them. At the beginning of the meeting on the invitation being given to present themselves for formal admission each new member will be led up to the Chairman by one supporter, and the Chairman will formally admit them to membership.

The introduction and reception of new members will take place at any of the forthcoming Ordinary General Meetings of the Royal Institute with the *exception of the meetings on the following dates :—*

24 January 1938 (Presentation of Medals and Prizes).
4 April 1938 (Presentation of the Royal Gold Medal).

ASSOCIATES AND THE FELLOWSHIP

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 7 February 1938 they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 11 December 1937.

LICENTIATES AND THE FELLOWSHIP

The attention of Licentiates is called to the provisions of Section IV, Clause 4 (*b*) and (*cii*), of the Supplemental Charter of 1925. Licentiates who are eligible and desirous of transferring to the Fellowship can obtain full particulars on application to the Secretary R.I.B.A., stating the clause under which they propose to apply for nomination.

Competitions

The Council and Competitions Committee wish to remind members and members of Allied Societies that it is their duty to refuse to take part in competitions unless the conditions are in conformity with the R.I.B.A. Regulations for the Conduct of Architectural Competitions and have been approved by the Institute.

While, in the case of small limited private competitions, modifications of the R.I.B.A. Regulations may be approved, it is the duty of members who are asked to take part in a limited competition to notify the Secretary of the R.I.B.A. immediately, submitting particulars of the competition. This requirement now forms part of the Code of Professional Practice in which it is ruled that a formal invitation to two or more architects to prepare designs in competition for the same project is deemed a limited competition.

PROPOSED COMPETITION FOR DESIGN FOR A BATHING STATION, HORNSEA U.D.C.

The Competitions Committee desire to call the attention of members to the fact that the conditions of the above competition are not in accordance with the regulations of the R.I.B.A. The Competitions Committee are in negotiation with the promoters in the hope of securing an amendment. In the meantime members should not take part in the competition.

PROPOSED COMPETITION FOR ALTERATIONS AND IMPROVEMENTS TO EBBW VALE CONSERVATIVE CLUB PREMISES

The Competitions Committee desire to call the attention of members to the fact that the conditions of the above competition are not in accordance with the Regulations of the R.I.B.A. The Competitions Committee are in negotiation with the promoters in the hope of securing an amendment. In the meantime members should not take part in the competition.

DUNDEE : DUNCAN OF JORDANSTONE COLLEGE OF ART

The Governors of the Dundee Institute of Art and Technology invite architects of British nationality domiciled in the United Kingdom to submit in competition designs for the Duncan of Jordanstone College of Art proposed to be erected on a site in Perth Road, Dundee.

Assessor : Mr. Julian R. Leathart [*F.*].
Premiums : £500, £250 and £150.
Last day for submitting designs : 6 May 1938.
Last day for questions : 19 January 1938.

Conditions of the competition may be obtained on application to the Clerk and Treasurer, Dundee Institute of Art and Technology, Bell Street, Dundee, Angus. Deposit £1 1s.

KEIGHLEY : NEW SENIOR MIXED SCHOOL

The Keighley Education Authority invite architects to submit, in competition, designs for a New Senior Mixed School, proposed to be erected on the Guard House Site, Keighley, Yorkshire.

Assessor : Mr. Harold A. Dod, M.A. [*F.*].
Premiums : 150 guineas, 100 guineas, 50 guineas.
Last day for submitting designs : 22 December 1937.
Last day for questions : 4 September 1937.

Conditions of the competition may be obtained on application to Mr. E. Ratcliffe, Director of Education, Education Office, Keighley, Yorks. Deposit £2 2s.

REDCAR : THE DEVELOPMENT OF THE "STRAY"

The Corporation of Redcar, Yorks, invite architects to submit in competition designs for the layout of, and buildings to be erected on, the "Stray" at the front of Zetland Park, Redcar.

Assessor : Professor Patrick Abercrombie [*V.-P.R.I.B.A.*]
Premiums : £250, £100, and £50.
Last day for submitting designs : 28 February 1938.
Last day for questions : 31 December 1937.

Conditions of the competition may be obtained on application to the Town Clerk, Municipal Buildings, Redcar, Yorks. Deposit £1 1s.

ROYAL NATIONAL EISTEDDFOD OF WALES, CARDIFF, 1938: ARCHITECTURAL COMPETITIONS

The Royal National Eisteddfod of Wales are promoting the following two competitions:

1) For a design for a scheme comprising Physical Culture Centre and Baths. Premiums: £60, £30 and £20.

2) For a design for a Group of Twelve Dwellings for Aged People. Premiums: £30 and £20.

The Assessor for the competitions is Mr. Percy E. Thomas, O.B.E., Hon. LL.D., Past-President R.I.B.A.

Closing date: 11 June 1938.

Particulars of the competitions may be obtained on application to The General Secretary, Royal National Eisteddfod of Wales, 11 Park Place, Cardiff.

ST. GEORGE'S HOSPITAL: RECONSTRUCTION

The President, Vice-President, Treasurer and Governors of St. George's Hospital invite architects practising in the United Kingdom and Northern Ireland to submit in competition designs for the reconstruction of St. George's Hospital, Hyde Park Corner.

Assessors: Dr. H. V. Lanchester [*F.*].
Mr. T. A. Lodge [*F.*].

Premiums: £500, £300 and £200.

Owing to an unavoidable delay in the issuing of the conditions, the last dates for the submission of designs and questions will be extended, in order that the same period for the preparation of designs will be available as was originally intended.

Conditions of the competition will be obtainable shortly on application to The House Governor, St. George's Hospital, Hyde Park Corner, London, S.W.1. Deposit £2 2s.

ESSAY COMPETITION: "THE FUTURE AND THE ARCHITECTURAL ASSISTANT"

The A.A.S.T.A. is promoting an Essay Competition open to any assistant in an architectural office or any student taking an architectural course on the subject "The Future and the Architectural Assistant."

Assessors: Professor C. H. Reilly, O.B.E. [*F.*].
Mr. H. de C. Hastings, Editor of the *Architectural Review*.
Mr. F. J. Maynard [*A.*], President A.A.S.T.A.

Prizes: £20, £10 and £5.

Closing date: 5 January 1938.

Full particulars may be obtained on application to The Secretary A.A.S.T.A., 113 High Holborn, London, W.C.1.

COMPETITION FOR A POSTER HOARDING

The Yorkshire and Northern Poster Advertising Association invite architects in practice or in training within the area of the West Yorkshire Society of Architects, York and East Yorkshire Society of Architects, Sheffield, South Yorkshire and District Society of Architects and Surveyors, and the Northern Architectural Association to submit in competition designs for a Poster Hoarding which can be erected in large or small towns and will fit in with its surroundings.

Assessors: Sir Enoch Hill (Chairman).
Mr. S. W. Milburn, M.C. [*F.*].
Mr. J. C. Amory Teather [*F.*].
Mr. C. W. C. Needham [*F.*].
Mr. Norval R. Paxton [*A.*].
Mr. Cyril Sheldon.
Mr. Arthur Taylor.

Premiums: £50, £30 and £20.

Last day for submitting designs: 31 March 1938.

Conditions of the competition may be obtained on application to the Hon. Secretary of any of the R.I.B.A. Allied Societies mentioned above.

FORTHCOMING COMPETITIONS

Other competitions which it is proposed to hold, and the conditions for which are not yet available, are as follows:—

BRIERLEY HILL, STAFFS.: NEW MUNICIPAL BUILDINGS
Assessor: Mr. Verner O. Rees [*F.*].

CHESTER: EXTENSIONS TO CHESTER ROYAL INFIRMARY
Assessor: Mr. Arthur J. Hope [*F.*].

EDMONTON: NEW TOWN HALL BUILDINGS
Assessor: Mr. E. Berry Webber [*A.*].

GLOUCESTER: NEW SWIMMING BATH AND FIRE STATION
Assessor: Mr. C. F. W. Dening, R.W.A. [*F.*].

PRESTWICH: NEW MUNICIPAL BUILDINGS
Assessor: Mr. T. C. Howitt, D.S.O. [*F.*]

SOUTH SHIELDS: ASSEMBLY HALL AND LIBRARY
Assessor: Mr. Arthur J. Hope [*F.*].

WOOD GREEN: NEW MUNICIPAL OFFICES AND COURTS
Assessors: Messrs. C. H. James, A.R.A. [*F.*] and S. Rowland Pierce [*A.*]

WREXHAM: NEW TOWN HALL
Assessor: Mr. Herbert J. Rowse [*F.*].

YEOVIL: NEW TOWN HALL
Assessor: Mr. C. Cowles-Voysey [*F.*]

MEMBERS' COLUMN

Owing to limitation of space, notices in this column are restricted to changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and appointments vacant. Members are reminded that a column in the Advertisement Section of the Journal is reserved for the advertisements of members seeking appointments in architects' offices. No charge is made for such insertions and the privilege is confined to members who are definitely unemployed.

PARTNERSHIPS WANTED

A.R.I.B.A. (Honours Design and A.A. Scholar), with 14 years' invaluable experience in important London offices and abroad and also private practice, seeks partnership with a well-established firm in London. Some capital available. Replies in strictest confidence.—Box 9117, c/o Secretary R.I.B.A.

A.R.I.B.A., A.A. diploma (30), requires position as assistant with a view to partnership after two or three years. Capital available. Seven years' practical experience of varied work in London and provincial offices, including departmental stores, schools, licensed premises, domestic, also some private work. Position preferred with well-established architect with country practice in south or west of England.—Apply Box 2711, c/o Secretary R.I.B.A.

PRACTICE FOR SALE

NOTTINGHAM. Owing to death of the principal [*F.*] a good general practice is for sale. Established 20 years. Offers to Messrs. Brown, White & Pears, Solicitors, Eldon Chambers, Wheeler Gate, Nottingham.

NEW PARTNERSHIPS

MESSRS. G. A. JELLICOE & PARTNERS have taken into partnership Miss E. A. Heckford, B.A., and the name of the firm has been changed to "Jellicoe, Page & Wilson." The practice will be continued at the present address (38 John Street, Bedford Row, London, W.C.1).

MESSRS. JORDAN, HANDISYDE & FAIRWEATHER [*A.A.*] have entered into partnership, and are practising at 7 Gower Street, London, W.C.1. Telephone: Museum 8483.

ASSISTANCE OFFERED

A.R.I.B.A., A.A.Dipl., with small practice, would like opportunity of assisting busy London architect. Varied experience on all constructional work, competitions, etc.—Box 8117, c/o Secretary R.I.B.A.

ASSOCIATE in private practice, London and Hampshire, will undertake part time assistance, preferably in own office, or supervision work.—T., Room 2, 38-40 Eccleston Square, S.W.1.

FOR SALE

FOR SALE.—A quantity of drawing-boards, levelling and other instruments, etc.; also a quantity of architectural books. Lists sent on request. Also a great quantity of illustrations from professional papers, these sent free.—H. D. Pritchett, Architect, 12 High Row, Darlington.

ASSISTANT WANTED

JUNIOR ASSISTANT of promising architectural and business capabilities required by eminent firm of London architects. Premium required and reciprocative terms can be arranged. Reply "Confidential," Box 2611, c/o Secretary R.I.B.A.

TRADE CATALOGUES WANTED

MR. GEOFFREY O. BROMLEY has now been appointed Staff Architect to Messrs. Goodworth's Stores, of St. Georges House, 91-101 The Highway, E.1, and will be pleased to receive trade catalogues at that address.

CHANGES OF ADDRESS

MR. STAVERS H. TILTMAN [*F.*] has removed from 42 Middle Street, Brighton, to new offices at 38 East Street, Brighton. Telephone No.: Brighton 4717.

MR. HAROLD E. TODD [*A.*] has moved to 27 Orchard Street, Bristol, 1.

MESSRS. BRAND, EDWARDS & BRANSON have moved to "Trinity House," 53 Regent Road, Leicester.

MR. T. E. MOORE [*Student*] has moved to St. Austell, Colman Avenue, Wednesfield, Staffs.

TELEPHONE NUMBER

THE Northampton office telephone number of Messrs. Brown and Henson [*FF.*] has been changed to Northampton 3311. The London office address and telephone number of the firm is now at 117 Sloane Street, London, S.W.1 (Telephone No. Sloane 8253).

MINUTES II

SESSION 1937-1938

At the second General Meeting of the Session 1937-1938, held on Monday, 22 November 1937, at 8 p.m.

Mr. T. A. Darcy Braddell, Vice-President, in the chair.

The meeting was attended by about 290 members and guests.

The Minutes of the Inaugural General Meeting held on 1 November 1937, having been published in the JOURNAL, were taken as read, confirmed and signed as correct.

The Hon. Secretary announced that, at the Council Dinner Club's dinner before the meeting, a specially bound copy of the R.I.B.A. Library Catalogue had been presented to Sir Banister (Flight) Fletcher, F.S.A., P.P.R.I.B.A., whose generous gifts had made possible the production of the catalogue.

The Hon. Secretary announced the decease of:—

The Rt. Hon. Earl Peel, P.C., G.B.E., G.C.S.I., elected Hon. Fellow 1929.

The Very Rev. Sir William Foxley Norris, K.C.V.O., D.D., Dean of Westminster, elected Hon. Associate 1928.

Sir Philip Colville Smith, C.V.O., elected Hon. Associate 1929.

Victor Alexandre Frédéric Laloux, Royal Gold Medallist 1929, elected Hon. Corresponding Member 1912.

John Russell Pope, elected Hon. Corresponding Member 1931.

William Edward Arthur Brown, elected Associate 1904, Fellow 1922.

Robert William Cable, elected Associate 1920, transferred to Fellowship 1925. Mr. Cable was an advisory member of the Board of Architectural Education from 1921 to 1923, a member of the Examinations Committee from 1928 to 1937, and the representative of the Indian Institute of Architects on the Allied Societies' Conference from 1930 to 1937.

Bertie Hawkins Collcutt, transferred to Fellowship 1925.

Harold John Connal, elected Associate 1921, Fellow 1934.

Henry Alderman Dickman, M.C., elected Associate 1910, Fellow 1925. Mr. Dickman was a Past President of the Nottingham, Derby and Lincoln Architectural Society and represented that body on the Allied Societies' Conference from 1925 to 1929.

John James Hill, transferred to Fellowship 1925.

Roland Hotz, elected Associate 1909, Fellow 1934.

Sydney Decimus Kitson, M.A., F.S.A., elected Fellow 1906. Mr. Kitson was Hon. Secretary R.I.B.A. from 1928 to 1934. He was President of the West Yorkshire Society of Architects and the representative of that body on the R.I.B.A. Council from 1910 to 1912, a member of the Literature Standing Committee from 1926 to 1928 and 1934 to 1937, being Chairman from 1927 to 1928.

Leonard Maggs, elected Licentiate 1911, Fellow 1921.

Ernest William Marshall, elected Associate 1897, Fellow 1906.

William Rhodes-Nunns, transferred to Fellowship 1925.

Charles James Smithem, elected Fellow 1894.

Francis Thomas Verity, elected Associate 1889, Fellow 1896. Mr. Verity was awarded the Tite Prize in 1889 and the R.I.B.A. London Architecture Bronze Medal in 1923. He was a member of the Council from 1924 to 1929, the Art Standing Committee from 1924 to 1928, and the Practice Standing Committee from 1928 to 1933.

Clarence Barnard Wagstaff, transferred to Fellowship 1925.

Montague Wheeler, elected Licentiate 1911, Fellow 1913.

Graham Clifford Awdry, R.W.A., elected Fellow 1888, transferred to Retired Fellowship 1929. Mr. Awdry was President of the Bristol Society of Architects and the representative of that body on the R.I.B.A. Council from 1914 to 1916.

Major William Howe Greene, O.B.E., elected Associate 1892, Fellow 1912, transferred to Retired Fellowship 1936.

Joseph Henry Pitt, transferred to Fellowship 1925, Retired Fellowship 1935.

Walter Pott, O.B.E., elected Associate 1888, Fellow 1912, transferred to Retired Fellowship 1921.

Edward Turner Powell, elected Fellow 1905, transferred to Retired Fellowship 1937.

William Edward Riley, R.B.A., R.B.C., elected Associate 1883,

Fellow 1900, transferred to Retired Fellowship 1935. Mr. Riley was a member of the Town Planning and Housing Committee from 1910 to 1925, and a member of the Council from 1920 to 1923.

Willie Swinton Skinner, elected Fellow 1907, transferred to Retired Fellowship 1934. Mr. Skinner was a Past President of the Bristol Society of Architects and represented that body on the R.I.B.A. Council and Allied Societies' Conference from 1923 to 1924. He was also a member of the Council from 1925 to 1929.

Thomas Stevens, elected Fellow 1893, transferred to Retired Fellowship 1926.

Ernest Augustus Eckett Woodrow, elected Associate 1881, Fellow 1905, transferred to Retired Fellowship 1927.

William Henry Ashford, elected Associate 1894. Mr. Ashford was an Associate Member of Council from 1922 to 1923.

Harry Cotton, elected Associate 1932.

Charles Alexander Rose, elected Associate 1930.

George Richardson Smith, elected Associate 1896.

Henry Ross, elected Associate 1889, transferred to Retired Associateship 1935.

Horace Ambrose Andrews, elected Licentiate 1934.

Seymour Charles Arding, transferred to Licentiateship 1925.

Ernest Osman Brown, elected Licentiate 1931.

Charles William Crush, elected Licentiate 1931.

Alfred James Holbrook, elected Licentiate 1911.

Richard Sydney Litherland, transferred to Licentiateship 1925.

John Morley, elected Licentiate 1911.

Marten Bingham Perry, elected Licentiate 1911.

Harold Marten Potter, elected Licentiate 1911.

William Swann, transferred to Licentiateship 1925.

George Clifford Thompson, elected Licentiate 1935.

George Louis Marie Verlyck, elected Licentiate 1911.

Robert Thomas Miller, elected Licentiate 1911, transferred to Retired Licentiateship 1933.

And it was resolved that the regrets of the Institute for their loss be entered on the Minutes and that a message of sympathy and condolence be conveyed to their relatives.

The following members attending for the first time since election were formally admitted by the Chairman :—

FELLOWS

Hylton B. Elkington
Ian B. M. Hamilton
J. A. Meikle
A. H. Powell
Edwin Smith

ASSOCIATES

Roger H. Bell
Maurice H. Bristow
Gilbert F. Kendrew
T. McEwan Porter
J. Austin Rixon
M. W. Smith

LICENTIATES

Lindsay F. Bullivant
Wilfrid Pippet
Raymond Walker
Leslie A. Webbe

Mr. C. J. Morreau, M.A.(Cantab.) [A.], having read a Paper on "The Prevention of Noise in Buildings," a discussion ensued, and on the motion of the Rt. Hon. Lord Horder, K.C.V.O., M.D., Chairman of the Anti-Noise League, seconded by Mr. Hope Bagenal, D.C.M. [A.], a vote of thanks was passed to Mr. Morreau by acclamation and was briefly responded to.

The proceedings closed at 10 p.m.

Architects' and Surveyors' Approved Society

ARCHITECTS' ASSISTANTS' INSURANCE FOR THE NATIONAL HEALTH AND PENSIONS ACTS

Architects' Assistants are advised to apply for the prospectus of the Architects' and Surveyors' Approved Society, which may be obtained from the Secretary of the Society, 113 High Holborn, London, W.C.1.

The Society deals with questions of insurability for the National Health and Pensions Acts (for England) under which, in general, those employed at remuneration not exceeding £250 per annum are compulsorily insurable.

In addition to the usual sickness, disablement and maternity benefits, the Society makes grants towards the cost of dental or optical treatment (including provision of spectacles).

No membership fee is payable beyond the normal Health and Pensions Insurance contribution.

The R.I.B.A. has representatives on the Committee of Management, and insured Assistants joining the Society can rely on prompt and sympathetic settlement of claims.

A.B.S. Insurance Department

THE ARCHITECTS' SPECIAL MOTOR CAR INSURANCE AT LLOYD'S

In conjunction with a firm of Lloyd's Insurance Brokers the Architects' Benevolent Society's Insurance Committee have devised a Special Motor Car Policy for Architects. This policy and the special advantages to be gained from it are available only to members of the Royal Institute of British Architects and its Allied and Associated Societies.

Special features include :—

1. Agreed values for all cars payable at any time in the event of a total loss.
2. A cumulative no-claim bonus from 20 per cent., rising to 33⅓ per cent. in the third year.
3. No extra premium for business use of car owned by individuals.
4. Prompt claims service in every part of Great Britain ; repairs carried out by any garage provided estimate is forwarded immediately.

SPECIMEN RATES FOR FULL COMPREHENSIVE POLICIES ARE GIVEN BELOW. OTHER RATES QUOTED ON APPLICATION

	Premium. £ s. d.
7 h.p. Austin, valued at £100	8 5 0
9 h.p. Standard, valued at £100	9 0 0
11 h.p. Morris, valued at £150	9 15 0
20 h.p. Hillman, valued at £300	13 7 0

(The rates shown do not apply to cars garaged in London and Glasgow and Lancashire manufacturing towns ; rates for these areas will be quoted on application.)

All enquiries with regard to the Special Motor Car Policy for Architects should be sent to the Secretary, A.B.S. Insurance Department, 66 Portland Place, W.1.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expressions of the Institute.

Members sending remittances by postal order for subscriptions of Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A. and crossed.

Members wishing to contribute notices or correspondence must send them addressed to the Editor not later than the Tuesday prior to the date of publication.

R.I.B.A. JOURNAL

DATES OF PUBLICATION.—1937.—20 December. 1938.—10, 24 January ; 7, 21 February ; 7, 21 March : 11, 25 April ; 9, 23 May ; 13, 27 June ; 18 July ; 15 August ; 12 September ; 17 October.